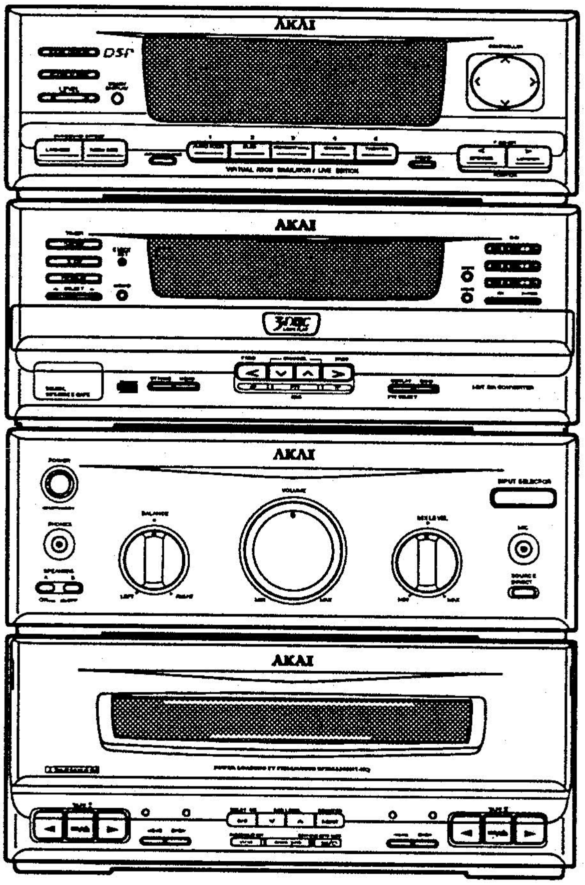
AKAI SERVICE MANUAL



COMPACT
disc
DIGITAL AUDIO

MODELS EA-890, TC-890 & AX-890

MINI STEREO COMPONENT SYSTEM

SYSTEM RX-890 series

(RX-893, 897)

TUNER CD PLAYER
MODEL TC-590, 890

STEREO DECK AMPLIFIER
MODEL AX-890

VIRTUAL ROOM SIMULATOR
MODEL EA-890

SPEAKER SYSTEM
MODEL SR-890

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MODEL SR-890

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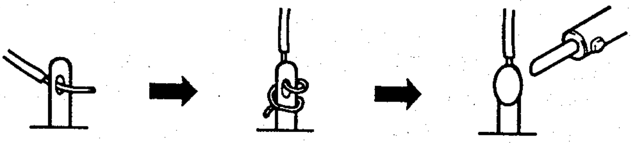
★ SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ (*) symbol are critical for safety. Replace them only with the parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.
   These must also be replaced only with the specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (insulating barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing micro switches
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap the ends of the wires securely around the terminals before soldering.



6. Make sure that wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit. The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15 µF capacitor, under the unit's normal working conditions. The leakage-current should be less than 0.5 mA rms AC. The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2M Ohms.

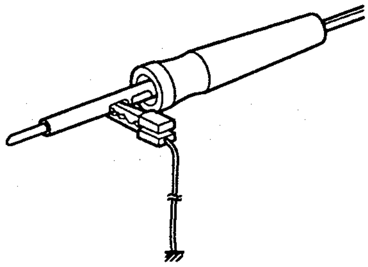
MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.
Please leave them at an appropriate depot.

PRECAUTIONS IN REPAIRING

When repairing or adjusing the unit, please note the following points.

1. Do not put excessive pressure on the mechanical part (operation part), including the pick-up block, as extremely high mechanical precision is required in these parts.
2. When the base is removed for repair or adjustment, make sure that there are no metal objects in the narrow gap between the P.C. board or the mecha parts and the base.
3. The Micro-Computer and the CD signal processing ICs can be damaged by static electricity or leakage from a soldering iron during repairing. While soldering, please take the precautions against leakage as in the illustration.



4. Do not loosen any screws in the pick-up block.
   When handling the pick-up block, please refer to the points to NOTE when replacing the pick up block.
5. To avoid hazardous invisible Laser Radiation, DO NOT look at the Laser Beam (Objective lens) directly.
6. On models for some countries, laser warning labels are affixed on the unit and inside of the unit, as shown below. For your safety, read these labels carefully when repairing or adjusting the unit.

[EUROPE, SCANDINAVIA, U.K. and AUSTRALIA]

CLASS 1 LASER PRODUCT
KLASSE 1 LASER PRODUKT
LUOKAN 1 LASER LAITE
KLASS 1 LASER APPARAT

Label affixed on the rear panel of the unit.

CAUTION ; INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED AVOID EXPOSURE TO BEAM.

ADVARSEL ; USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING.

VARO ; AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE
ÄLÄ KATSO SÄTEESEEN !

VARNING , OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD
BETRAKTA EJ STRÅLEN !

Label affixed on the reverse side of the rear panel of the unit (except $\boxed{U}$ model).

INFORMATIONS

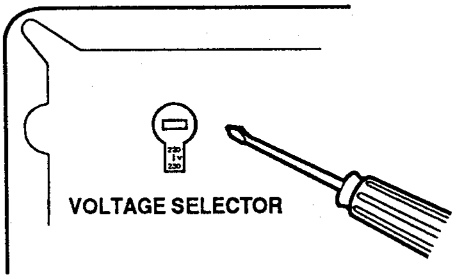
SYMBOLS FOR PRIMARY DESTINATION

Unit destinations are indicated with letters as shown below.

Symbols	Principal Destinations
A	U.S.A.
B	U.K.
C	Canada
E	Europe (except U.K.)
J	Japan
S	Australia
V	Germany
U	Universal Area
Y*	Custom version

VOLTAGE CONVERSION (U Model only)

Before connecting the power cord, set the VOLTAGE SELECTOR located on the rear panel of the AX-890 so that the correct voltage for your area is indicated.



PRECAUTION ABOUT THE POWER SUPPLY

The power supply of the TC-590,890 and EA-890 are supplied from the AX-890.

Transmission of the system control signal between the TC-590/890 and other components (AX-890, EA-890) is absolutely necessary to control the system. Therefore, when repairing one of the components of this MIDI STEREO COMPONENT SYSTEM, all components should normally be connected together. If all components are not available when repairing, the minimum combination of components that will be necessary for repair is as follows.

AX-890

The transmission of the system control signal between the TC-590/890, EA-890 and AX-890 is absolutely necessary to control the system in normal use. Also an audio signal selected in the AX-890 will be output to the EA-890 then return to AX-890. If the TC-590/890 and EA-890 are not available when repairing the AX-890, proceed as follows.

To turn the power on:

Press the power switch more than 5 seconds after the AC power cord is connected to the AC outlet.

Although the "INPUT SELECTOR" has no indication, it is possible to change the input source with the "INPUT SELECTOR" button. Pressing the "INPUT SELECTOR" button repeatedly will change the input source in the following order: CD → FM → TAPE-I → TAPE-II → PHONO → LINE.

Repeated pressing of the button repeats this cycle. However if the EA-890 is not connected to the AX-890, no sound is heard from the speakers or headphones. Therefore if the EA-890 is not available, short the 1 pin and 2 pin (for R-ch), 4 pin and 5 pin (for L-ch) of the "CONTROL B" connector on the rear panel of the AX-890 respectively.

TC-590,890

Power for the TC-590 or TC-890 is supplied from the AX-890.

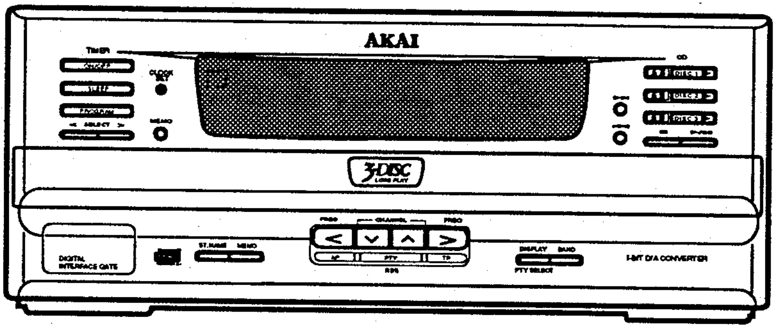
Also, transmission of the system control signal between the TC-590/890 and AX-890 is necessary to control the system. Therefore, when repairing the TC-590 or TC890, repair should be made together with the AX-890.

EA-890

Power for the EA-890 is supplied from the AX-890.

Also, transmission of the system control signal between the EA-890 and AX-890 is necessary to control the system.

Therefore, when repairing the EA-890, repair should be made together with the AX-890.



TUNER CD PLAYER

SPECIFICATIONS

Tuner section

FM

RDS function (TC-890 only)	PS/CT/AF/PTY/TP
Tuning frequency range	87.5 to 108 MHz
Usable sensitivity	
(V)	17.2 dBf (IHF, 3 % THD)
(E, S, U)	13.2 dBf (IHF, 3 % THD)
Quieting sensitivity	
MONO	
(V)	21.2 dBf
(E, S, U)	17.2 dBf
STEREO	
(V)	35.2 dBf
(E, S, U)	31.2 dBf
S/N ratio (IHF)	
MONO	
(V)	65 dB
(E, S, U)	70 dB
STEREO	
(E, S, U, V)	60 dB
Frequency response	30 Hz to 15 kHz ± 1 dB
Total harmonic distortion	
MONO	0.3 % (at 1 kHz)
STEREO	0.7 % (at 1 kHz)
Selectivity	70 dB (±400 kHz)
Image rejection	
(V)	80 dB
(E, S, U)	50 dB
Stereo separation	42 dB (at 1 kHz)
Capture ratio	2 dBf
AM suppression	60 dB
Spurious rejection	80 dB
IF rejection	
(V)	105 dB
(E, S, U)	90 dB

MW

Tuning frequency range	
(E, S, V)	531 to 1602 kHz (9 kHz step)
(U)	531 to 1602 kHz (9 kHz step) 530 to 1710 kHz (10 kHz step)
Usable sensitivity	500 μVm
S/N ratio	40 dB
Selectivity	20 dB
Image rejection	35 dB
IF rejection	60 dB

LW

Tuning frequency range	
(E)	153 to 351 kHz (1 kHz step)
(S, U, V)	153 to 279 kHz (1 kHz step)
Usable sensitivity	800 μVm
Selectivity	25 dB
Image rejection	35 dB
IF rejection	60 dB

CD section

Type	3 discs auto changer
Pick up system	3 beam laser pick-up
Sampling frequency	44.1 kHz
Error correction system	Cross interleave reed solomon
Frequency response	20 to 20,000 Hz ± 1 dB
S/N ratio	97dB (A-weight)
Dynamic range	92 dB
Wow & flutter	Less than measurable limits
Total harmonic distortion	0.006% (at 1 kHz)
Channel separation	80 dB (at 1 kHz)

GENERAL

Dimensions	270 (W) x 111 (H) x 330 (D) mm
Weight	3.0 kg
Power requirement	Supplied from AX-890
Power consumption	10 W (Nominal 8 W)

Standard accessories

FM long wire antenna	x 1
AM loop antenna	x 1
Plug adaptor	x 1

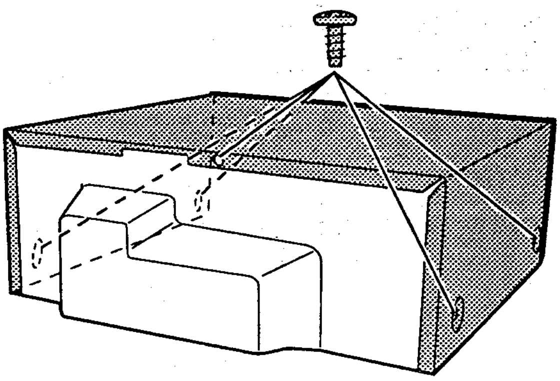
* For improvement purposes, specifications and design are subject to change without notice.

I. DISASSEMBLY

In case of trouble etc., necessitating dismantling, please dismantle in the order shown in the illustrations.
Reassemble in the reverse order.

1. Removal of UPPER COVER

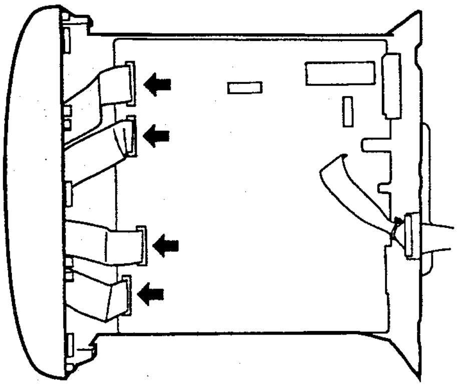
1) Remove the five screws.



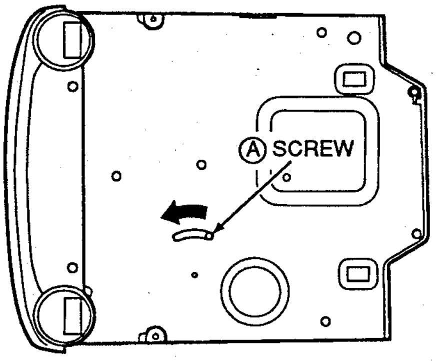
2) Remove the UPPER COVER.

2. Removal of FRONT PANEL

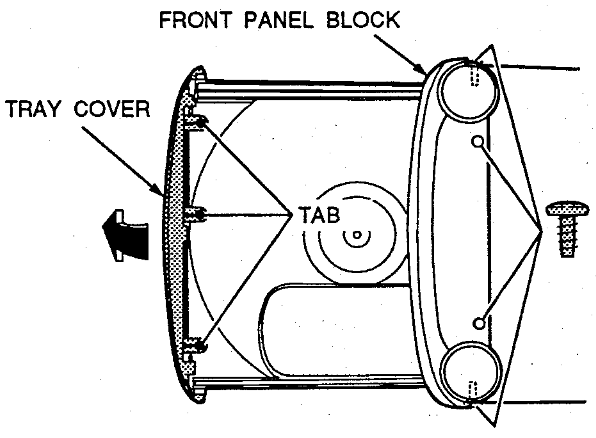
1) Disconnect the J500, J501, J502 and J503 connecters on the TU-CD PCB.
Refer to the note #1 on page 10 before disconnecting.



2) Slide the Ⓐ screw on the bottom in the forward direction with a philips type screwdriver. Then pull the TRAY in the forward direction.



3) While pulling up the three tabs, remove the tray cover by carefully pulling it off in the direction of the arrow.



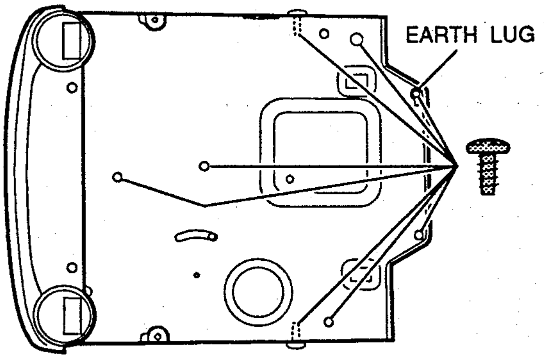
4) Remove the two screws on both sides and the two screws on the bottom.

5) While pulling the tabs on the side outwards, remove the FRONT PANEL BLOCK.

3. BOTTOM COVER

1) Remove the four FRONT PANEL retaining screws (refer to steps 4) and 5) of step 2). (It is not necessary to remove the FRONT PANEL BLOCK completely.)

2) Remove the two screws on the side and six screws on the bottom.



3) Remove the BOTTOM COVER by pulling it backward carefully.

II. PRINCIPAL PARTS LOCATION

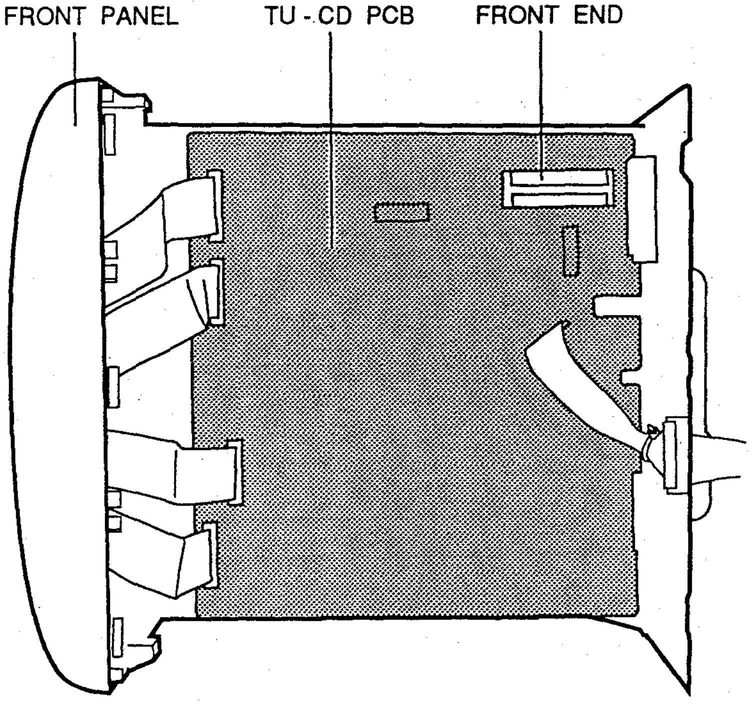

FRONT PANEL
TU - CD PCB
FRONT END

Fig. 2-1 Top view (1)

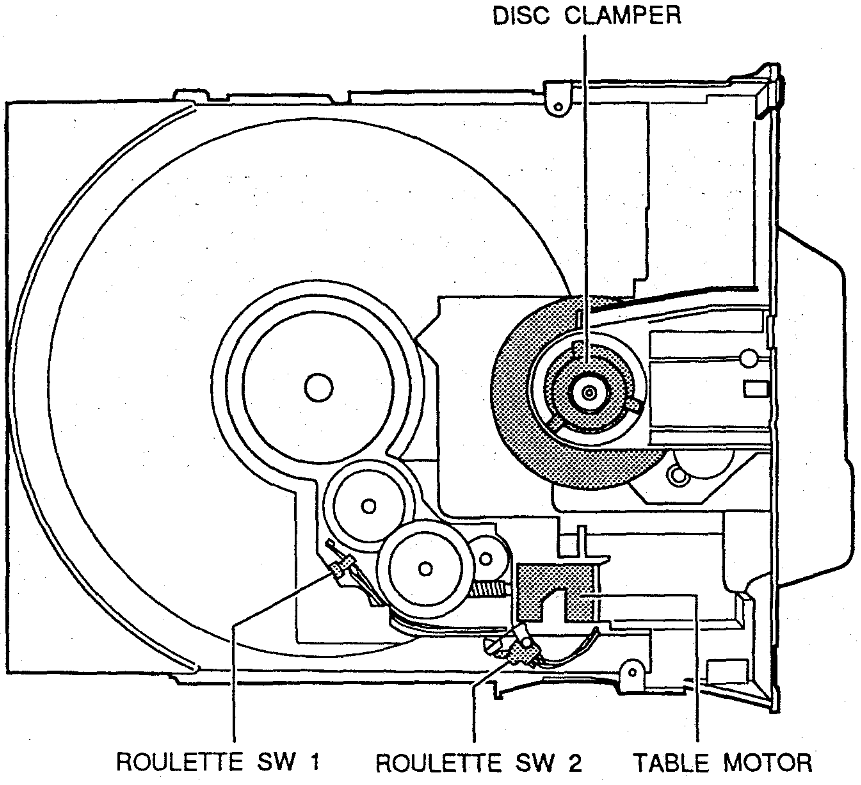

DISC CLAMPER
ROULETTE SW 1
ROULETTE SW 2
TABLE MOTOR

Fig. 2-2 Top view (2)

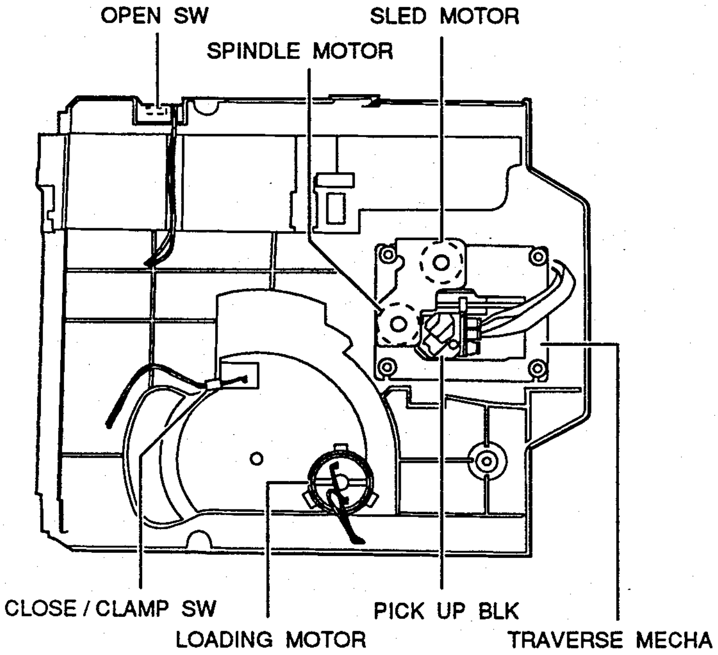

OPEN SW
SLED MOTOR
SPINDLE MOTOR
CLOSE / CLAMP SW
PICK UP BLK
LOADING MOTOR
TRAVERSE MECHA

Fig. 2-3 Bottom view

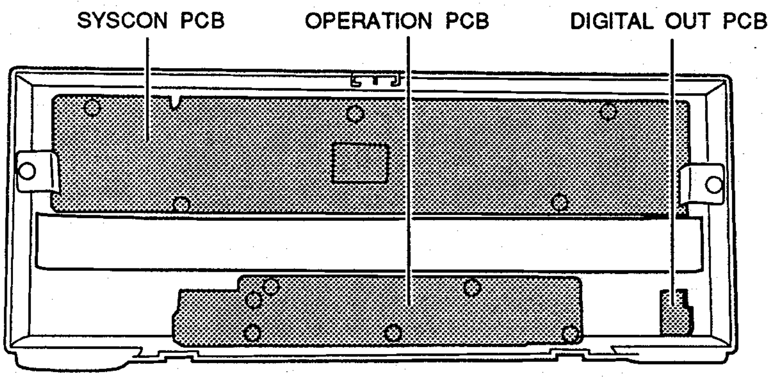

SYSCON PCB
OPERATION PCB
DIGITAL OUT PCB

Fig. 2-4 Front panal

III. MAIN COMPONENTS REPLACEMENT

3-1. REMOVAL OF THE TRAVERSE MECHA.

1) Remove the BOTTOM COVER (refer to page 6).
2) Short the circuit on the PICK UP BLOCK with solder as shown in Fig. 3-1.

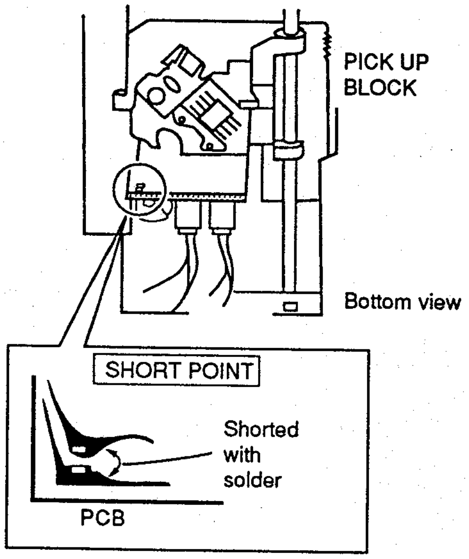


Fig. 3-1

3) Disconnect the three connectors carefully (two connectors are on the PICK UP PCB and the other is on the MOTOR PCB of the TRAVERSE MECHA.).

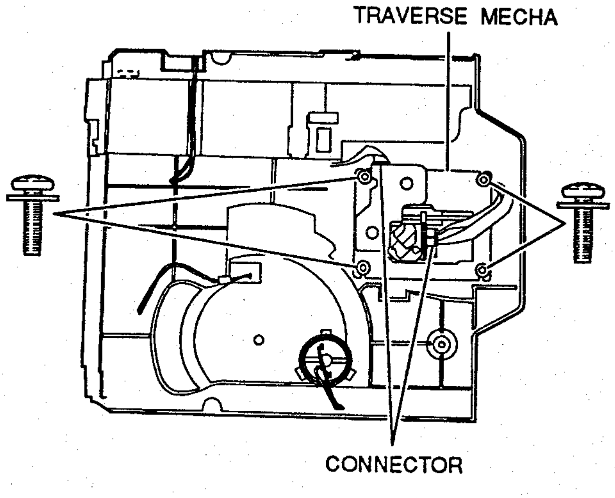


Fig. 3-2

4) Remove the four retaining screws, then remove the PICK UP BLOCK.
5) Proceed in the reverse order for installation but never unsolder the shorted part before connecting the three connectors.

Note:
To protect the laser diode from damage caused by high voltage static electricity, a part of the PCB on the PICK UP BLOCK has to be shorted before disconnecting the connectors. After replacement, be sure to connect the two connectors and then remove the solder at the shorted part before turning the power ON.

3-2.REPLACEMENT OF THE SLED MOTOR

1) Remove the TRAVERSE MECHA (refer to section 3-1).
2) Unsolder the leads of the SLED and SPINDLE MOTORs then remove the MOTOR PCB.

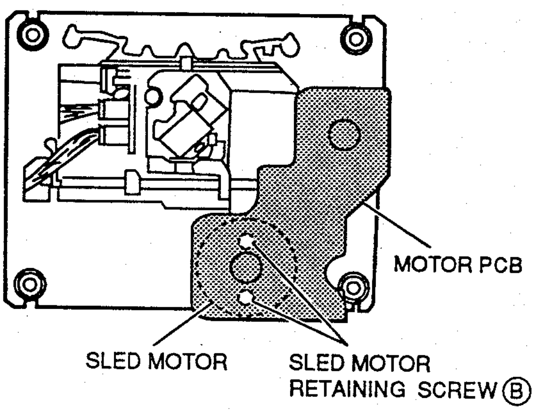


Fig. 3-3

3) Remove the SLED MOTOR RETAINING Ⓑ SCREWS, then replace the SLED MOTOR.
4) Reassemble in the reverse order.

About the SPINDLE MOTOR:
Replacement of the SPINDLE MOTOR itself is not recommended because the adjustment of the TURN TABLE height is quite critical and requires the use of a special jig.

3-3. REPLACEMENT OF THE PICK UP BLOCK

1) Remove the TRAVERSE MECHA (refer to section 3-1).
2) Push the Ⓐ stopper in the right direction and pull the SLIDE SHAFT in the forward direction to remove the PICK UP BLOCK, then replace the PICK UP BLOCK.

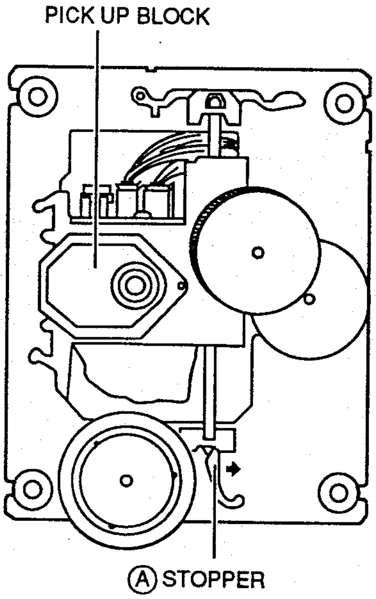


Fig. 3-4

3) Reassemble in the reverse order.

3-4. REMOVAL OF THE TU-CD PCB

Note:

1. To protect the system control IC from the electrical damage, wait more than 1 min. after unplugging the power cord before disconnecting the connectors.
   And also remove the solder between JW120 and JW121 on the TU-CD PCB. (This will disconnect the C510 positive side.) Never short the JW120 and JW121 with the solder before connecting the connectors when reassembling.

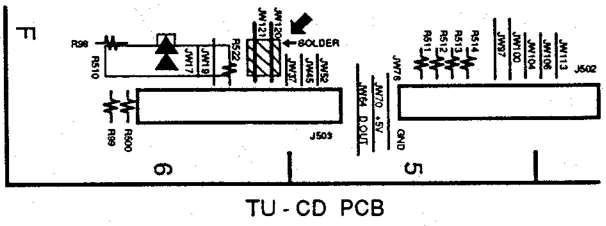

F
R98
R510
JW17
JW19
R522
JW121
JW120
SOLDER
JW37
JW45
JW52
R99
R500
J503
JW64 D.OUT
JW70 +5V
JW76
GND
R511
R512
R513
R514
JW97
JW100
JW104
JW106
JW113
J502
6
5
TU - CD PCB

Fig. 3-5a

2. When disconnecting the flat cable, first unlock the stopper on the connector by pulling it upward before disconnecting. When connecting, press down the stopper on the connector first, then insert the wires of the flat cable into the respective holes on the connector carefully.

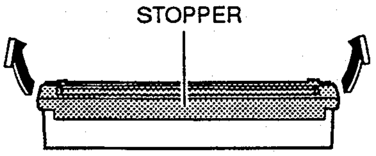


Fig. 3-5b

1) Remove the six Ⓐ screws and remove the REAR PANEL as shown in Fig. 3-6.

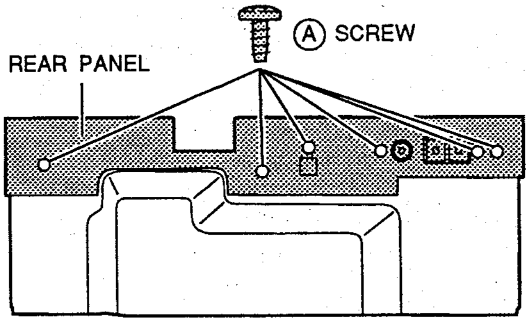

Ⓐ SCREW
REAR PANEL

Fig. 3-6

2) Disconnect the four flat cables from the J500, J501, J502 and J503 connectors on the TU-CD PCB.
3) Disconnect the P200, P201, P202, P203 and P204 connectors on the TU-CD PCB. Be sure to short the shorting point on the PICK UP PCB before disconnecting the P200 and P201 connectors. (Refer to Fig.3-1 onpage 9.)
4) Remove the Ⓑ screw and the five Ⓒ screws of the TU-CD PCB, then remove the TU-CD PCB.

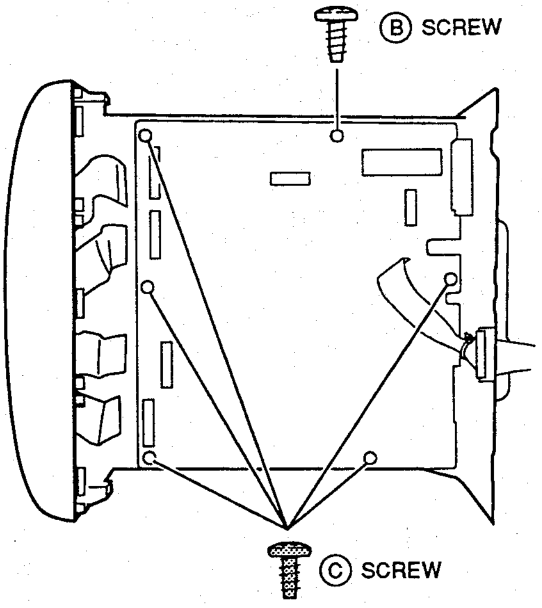

Ⓑ SCREW
Ⓒ SCREW

Fig. 3-7

3-5. REPLACEMENT OF THE LOADING MOTOR

1) Remove the BOTTOM COVER (refer to page 6).
2) Push the GEAR HOLDER retaining screw in the direction of the arrow, then pull out the TRAY BLOCK.

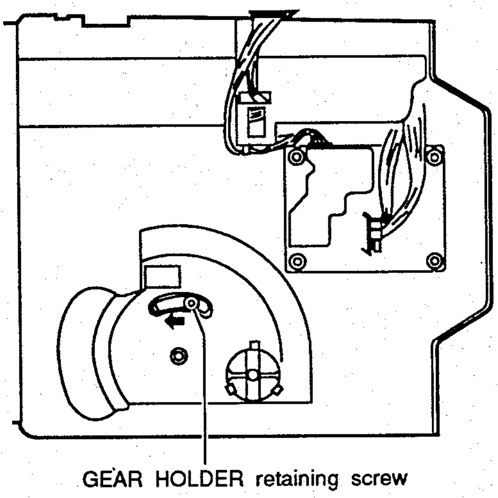

GEAR HOLDER retaining screw

Fig. 3-8

3) Unhook the LOADING BELT with tweezers.
4) Unsolder the lead wires of the LOADING MOTOR with a soldering iron.
5) While opening the LOADING MOTOR's three retaining tabs, push the motor pully part down with your middle finger to remove the LOADING MOTOR, then replace it.

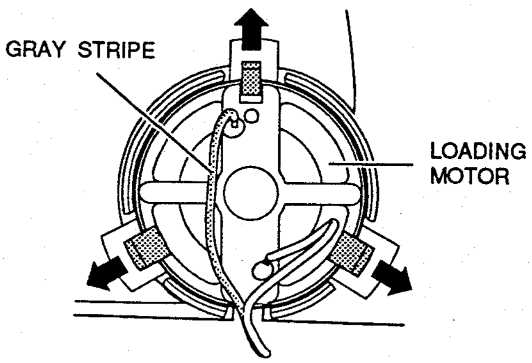

GRAY STRIPE
LOADING MOTOR

Fig. 3-9

6) Reassemble in the reverse order. Make sure that the wire with the gray stripe is connected to the motor's O marked terminal when soldering.

3-6. REMOVAL OF THE TRAY BLOCK

1) Remove the FRONT PANEL BLOCK and BOTTOM COVER (refer to page 6).
2) Remove the TU-CD PCB (refer to page 10).
3) If the TRAY BLOCK is at the "in " position, slide the GEAR HOLDER retaining screw in the direction of the arrow and pull out the TRAY BLOCK slowly (refer to Fig.3-8).
4) Remove the PCB HOLDER retaining screws then remove the PCB HOLDER and the BRACKETs on both sides.

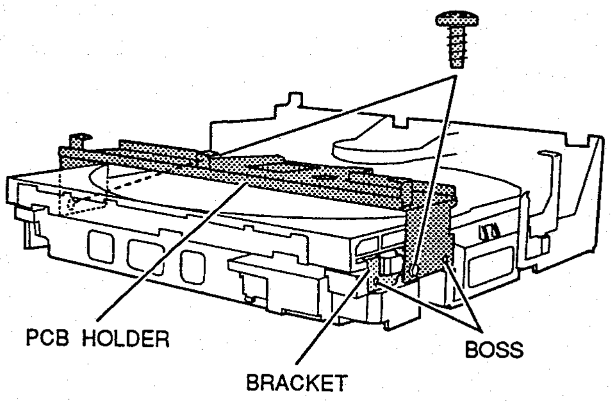

PCB HOLDER
BRACKET
BOSS

Fig. 3-10

5) Remove the TRAY BLOCK.

3-7. REPLACEMENT OF THE TABLE MOTOR

1) Remove the TRAY BLOCK (refer to section 3-6).
2) Remove the DISC HOLDER retaining screw, then remove the DISC HOLDER.

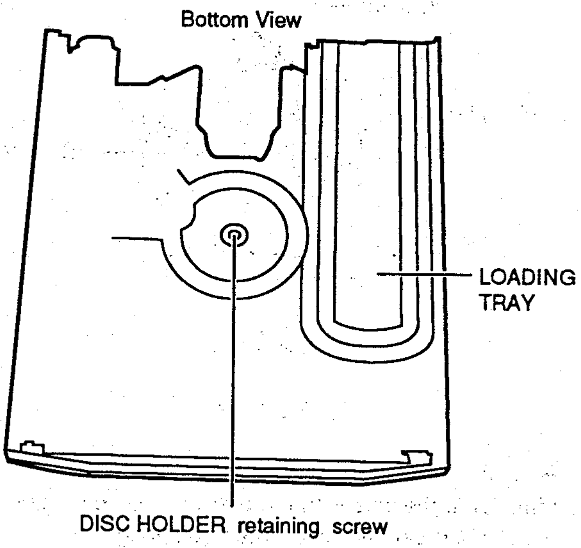

Bottom View
LOADING TRAY
DISC HOLDER retaining screw

Fig. 3-11

3) Remove the TABLE GEAR (B) and WORM WHEEL TABLE GEAR.

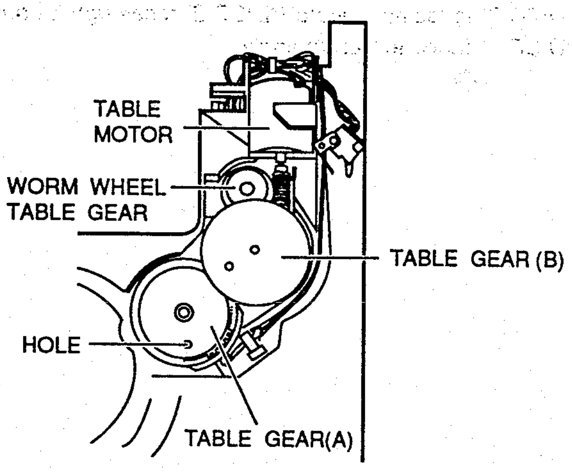


TABLE MOTOR
WORM WHEEL TABLE GEAR
TABLE GEAR (B)
HOLE
TABLE GEAR(A)

Fig. 3-12

4) Unsolder the lead wires of the TABLE MOTOR.
5) Remove the TABLE MOTOR while opening the TABLE MOTOR retaining hook and squeezing the motor stopper. Then replace the TABLE MOTOR.

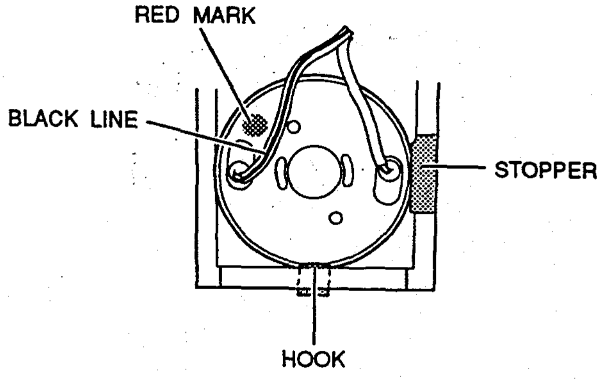


Fig. 3-13

6) Reassemble in the reverse order.

- Make sure the wire with the black line is connected to the motor's red side terminal when soldering.
- When attaching the TABLE GEAR (B), make sure that the TABLE GEAR (A)'s hole is aligned with its reference hole on the LOADING TRAY.
- When installing the DISC HOLDER on the LOADING TRAY, make sure to place the DISC HOLDER so that "DISC 3" is facing upward ("DISC 2" faces right and label "DISC 1" faces left accordingly).

IV. ADJUSTMENT (TUNER SECTION)

Note: There is no adjustment for the CD player.

4-1. INSTRUMENT CONNECTIONS

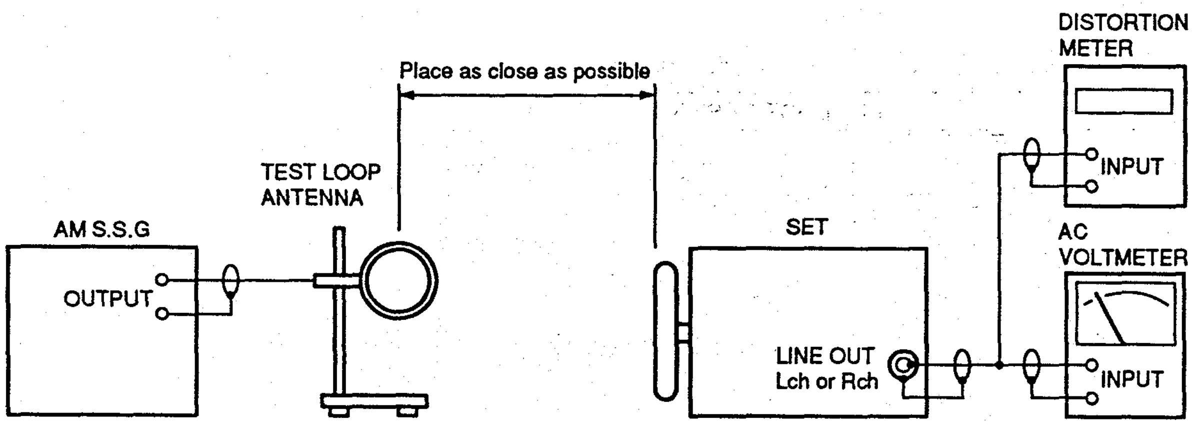

Place as close as possible
TEST LOOP ANTENNA
AM S.S.G
OUTPUT
SET
LINE OUT
Lch or Rch
DISTORTION METER
INPUT
AC VOLTMETER
INPUT

Fig. 4-1 Instrument connection for AM tuner adjustment

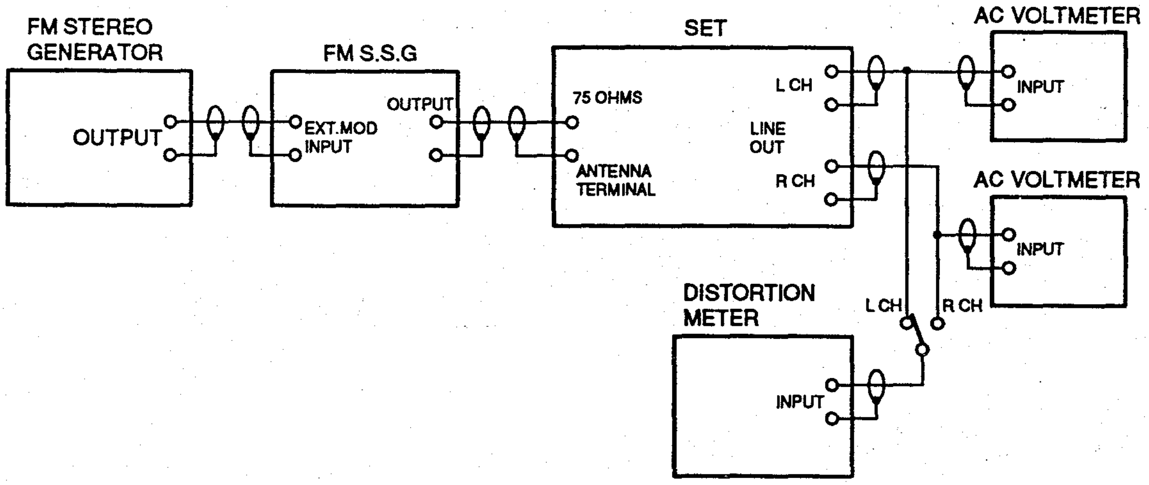

FM STEREO GENERATOR
OUTPUT
FM S.S.G
EXT.MOD INPUT
OUTPUT
SET
75 OHMS
ANTENNA TERMINAL
L CH
LINE OUT
R CH
AC VOLTMETER
INPUT
AC VOLTMETER
INPUT
DISTORTION METER
INPUT
L CH
R CH

Fig. 4-2 Instrument connection for FM tuner adjustment

Note:
Before making adjustment, select the tuner mode (FM, MW or LW) by pressing the "INPUT SELECTOR" button on the AX-890, then select the tuner band with the "BAND" button on the TC-590,890 according to the adjustment procedure.

4-2. HOW TO CALL THE PRESET FREQUENCY FOR THE ADJUSTMENT

The preset frequency can be called with the "TUNER/CD 10 KEY" buttons on the remote control unit. To clear the previous preset stations, press the "RESET" button on the rear panel before proceeding. The internal frequency preset memory is set as shown below.

Initial preset frequency for adjustment and inspection.

PRESET ch No.	PRODUCT DESTINATION	
	S, U, V	E
1	FM 98.0 MHz AUTO	FM 98.0 MHz AUTO
2	FM 88.0 MHz MONO	FM 88.0 MHz MONO
3	FM 108.0 MHz MONO	FM 108.0 MHz MONO
4	LW 162 kHz	LW 162 kHz
5	LW 279 kHz	LW 297 kHz
6	LW 198 kHz	LW 198 kHz
7	MW 1404 kHz	MW 1404 kHz
8	MW 603 kHz	MW 603 kHz
9	MW 999 kHz	MW 999 kHz
10	LW 279 kHz	LW 351 kHz
11	FM 87.5 MHz MONO	FM 87.5 MHz MONO
12	FM 90.0 MHz MONO	FM 90.0 MHz AUTO
13	FM 106.0 MHz MONO	FM 106.0 MHz MONO
14	MW 531 kHz	MW 531 kHz
15	MW 1602 kHz	MW 1602 kHz
16	LW 153 kHz	LW 153 kHz
17	FM 87.5 MHz	LW 288 kHz
18 - 30	FM 87.5 MHz AUTO	FM 87.5 MHz AUTO

Note: About tuning step conversion (effective on U version only)

The MW frequency band of this unit is preset to 9 kHz tuning intervals. However, the frequencies of MW broadcasts in some countries are set at 10 kHz intervals.

If your country uses 10 kHz tuning intervals, the following tuning step conversion is necessary before you can tune in stations.

1. Turn the power ON.
2. Select the tuner mode by pressing the "INPUT SELECTOR" button.
3. Select the "FM mono" mode by pressing the "BAND" button.
4. Press and hold the "BAND" button for over 5 seconds until [AM 530 kHz] appears on the FL display. Tuning intervals will now be set to 10 kHz.

- To reset the unit to 9 kHz tuning intervals:
  Press the "RESET" button located on the rear panel.

∗ The LW frequency band can not be selected with the "BAND" button at MW 10 kHz tuning interval mode.

∗ The preset frequency can not be called with "TUNER/CD 10 KEY" button at MW 10 kHz tuning interval mode.

4-3. ADJUSTMENT

NOTE:
1. Set the S.S.G to 1 kHz, 75 kHz deviation for U, S, B, or E model and 1 kHz 40 kHz deviation for V model during FM section adjustment.
2. Set the S.S.G to 1 kHz, 30 % modulation during AM section adjustment. The frequencies indicated in < > are for the E version model.

STEP | ADJUSTMENT ITEM
1. S.S.G frequency & output level
2. Set's tuning frequency & mode
3. Test point, adjustment part
4. Remarks (•) & result (*)

Test Point Adjustment Part

FM

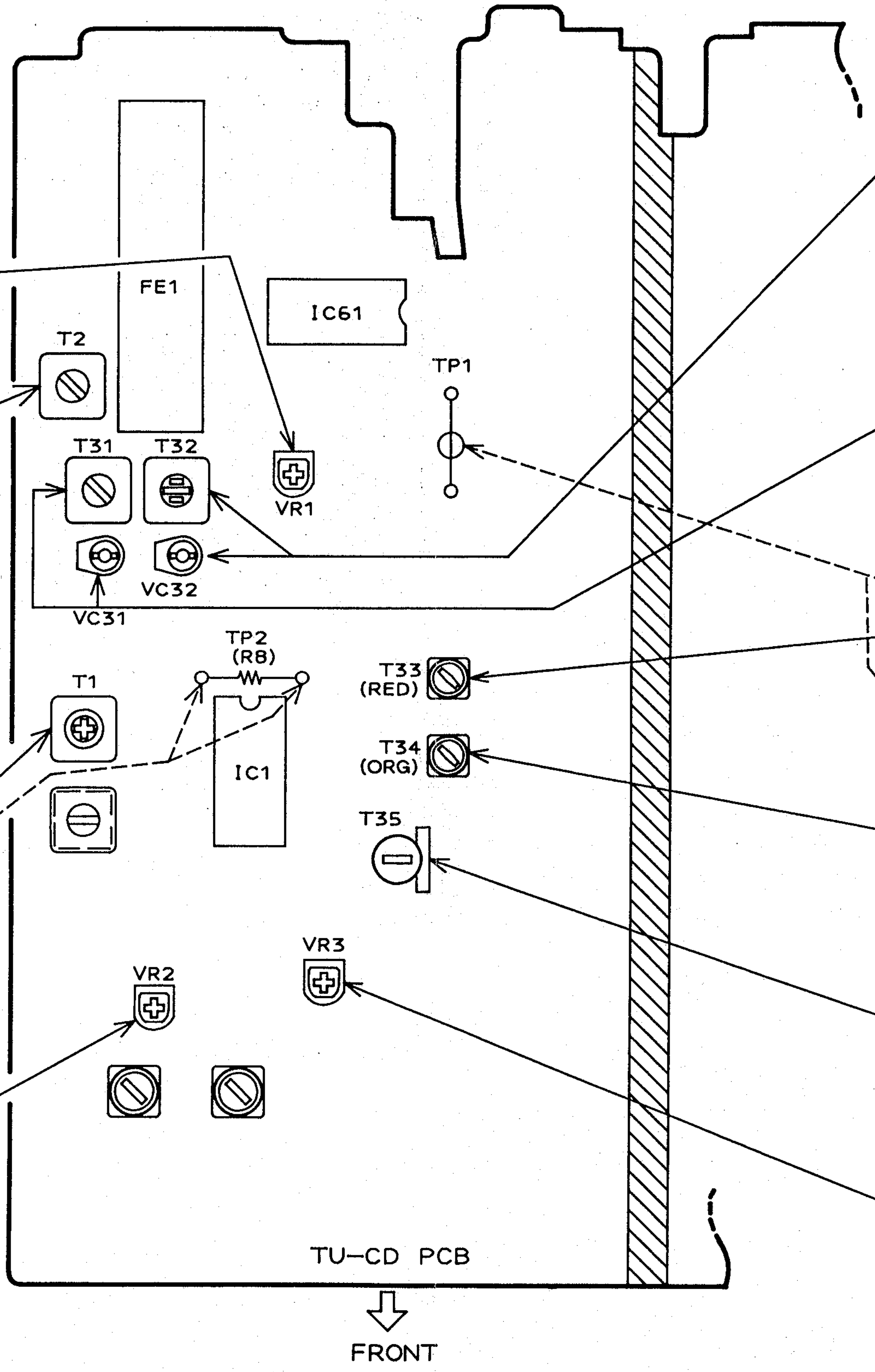
3 | FM TUNING INDICATOR
1. 98.0 MHz, 22 dBμ (MONO)
2. 98.0 MHz (preset 1 ch but FM MONO)
3. Tuning Indicator on the FLD, VR1
4. * Tuning indicator is lit at 22 dBμ input.

2 | MONO USABLE SENSITIVITY
1. 98.0 MHz, 3 dBμ (MONO)
2. 98.0 MHz (preset 1 ch but FM MONO)
3. T2
4. • Connect the distortion meter to the LINE OUT.
   * Minimum distortion

4 | DISTORTION (STEREO)
1. 98.0 MHz, 60 dBμ (STEREO L or R channel only)
2. 98.0 MHz (FM AUTO, preset 1 ch)
3. T2
4. • Connect the distortion meter to LINE OUT.
   * Minimum Distortion (less than 1.0 %)
   Note: Never turn the T2 more than ± 90°.

1 | CENTER VOLTAGE
1. 98.0 MHz,60 dBμ (MONO)
2. 98.0 MHz (FM AUTO, preset 1 ch)
3. T1
4. • Connect the DC Digital Voltmeter to both ends of TP2(R8).
   * 0 ± 50 mV

5 | STEREO SEPARATION
1. 98.0 MHz, 60 dBμ (STEREO L or R channel only)
2. 98.0 MHz (FM AUTO, preset 1 ch)
3. VR2
4. • Connect the milli-voltmeter to LINE OUT.
   * Minimum output level for opposite channel.



AM

3 | LW SENSITIVITY
1. 162 kHz, 74 dBμ (Low) & 279 kHz <297 kHz>, 74 dBμ (High)
2. 162 kHz (preset 4 ch), 279kHz <297 kHz> (preset 5 ch)
3. T32 (Low), VC32 (High)
4. • Connect the distortion meter to LINE OUT.
   * Minimum distortion & maximum output level.
   * For best results, repeat Low and High adjustments several times.

4 | MW SENSITIVITY
1. 603 kHz, 74 dBμ (Low) & 1,404 kHz, 74 dBμ (High)
2. 603 kHz (Low) (preset 8 ch) 1,404 kHz (High) (preset 7 ch)
3. T31 (Low) & VC31 (High)
4. • Connect the distortion meter to LINE OUT.
   * Minimum distortion & maximum output level.
   * For best results, repeat Low and High adjustments several times.

2 | MW OSC
1. –
2. 1,404 kHz (preset 7 ch)
3. T33
4. • Connect the Digital DC Voltmeter between TP1 (JW 91) and GND.
   * 6.7 ± 0.05 V

1 | LW OSC
1. –
2. 279 kHz <351 kHz> (preset 10 ch)
3. TP1 (JW 91) & T34
4. • Connect the Digital DC Voltmeter between TP1 and GND.
   * 5.4 ± 0.05V <8.2 ± 0.05V>

5 | IF LEVEL
1. 198 kHz, 74 dBμ
2. 198 kHz (preset 6 ch)
3. T35
4. • Connect the milli-voltmeter to LINE OUT.
   * Maximum output level.

6 | AM TUNING INDICATOR
1. 999 kHz, 55 dBμ
2. 999 kHz (preset 9 ch)
3. Tuning indicator on the FLD, VR3
4. * Tuning LED is lit.

V. SUPPLEMENTAL INFORMATION

TEST MODE FOR CD's OPERATION CHECK

There is no manual adjustment in the CD section on this model.
CD section adjustments are automatically carried out by the micro computer.
If the CD player section is defective and it is necessary to check the operation partially, "CD operation check" mode in the verious TEST MODEs can be used while repairing.

To engage the "CD operation check" mode
While pressing and holding both the "MEMO" and "FREQUENCY ►" buttons, plug in the AC power cord to the AC outlet.

Note:
- During "CD operation check" mode, only the DISC 1 "⏏" open/close button can be used for loading. Place a disc on TRAY 1 accordingly.
- Carry out testing by pressing the "DISC 1 ▷" button once for each testing step.
- To disengage the test mode for "CD operation check", disconnect the AC power cord from the AC outlet.
- The testing step will return to "TEST-0" if the "⏏" open/close button for disc 1 is pressed during steps "TEST-1" to "TEST-9".
- To continue checking after the step number has reached "TEST-9", open the tray once then repeat the procedure.
- The test result is displayed at the right side of the testing step number indication in the FL display. The result will be indicated as "OK" or "NG" (Not Good).

Testing step	Operation
TEST-0	Right after the "CD operation check" mode is engaged.
TEST-1	For checking the Laser beam projection.
TEST-2	For checking the memorization of the electrical tracking offset.
TEST-3	For checking the memorization of the electrical focus offset.
TEST-4	For checking the adjustment of the rough focus amp gain.
TEST-5	For checking the adjustment of the rough tracking amp gain.
TEST-6	For checking the adjustment of the tracking balance.
TEST-7	For checking the adjustment of the rough focus balance.
TEST-8	For checking the adjustment of the precise focus amp gain.
TEST-9	For checking the adjustment of the precise tracking amp gain.

VI. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list the Part No., Model No. and the description of earch part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

2. HEAD BASE BLOCK

Ref. No.	Part. No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20×03STL CMT
4	ZS-536488	BID20×08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in the figure.

b) PC Block

2. MAIN PC BOARD

Ref. No.	Part. No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A] : AAL (U.S.A)
[S] : SAA (Australia)
[B] : BEAB (England)
[U] : U/T (Universal Area)
[C] : CSA (Canada)
[E] : CEE (Europe)
[V] : VDE (Germany)
[J] : JPN (Japan)
[Y] : Custom

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

⚠ (✱) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ (✱) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCUTITÉDE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT.

1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	* BB-408757N5	MECHATRAVERSE KSM-2101ABM
2	BM-733203M	MOTOR GEARASSY (MB)
3	BM-374198	MOTOR RF-370CA-15370
4	BM-408752M1	MOTOR RF-500TB-14415
5	* BO-394728J2	PICK UP KSS-210A
6	ED-418635J	D LED SEL6415E(C,D) GREEN
7	ED-307572	D SILICON H 1SS131
8	* ED-511907	D SILICON 1N4002 100/1.0A
9	ED-372893	D VARACTOR SVC321SPAA DBL
10	* ED-402202J	D ZENER H HZS11A1
11	* ED-418687J	D ZENER H HZS11A1L T26
12	* ED-396363J	D ZENER H HZS11B3
13	* ED-418676J	D ZENER H HZS11C2L T26
14	ED-402181J	D ZENER H HZS3A1
15	ED-397175J	D ZENER H HZS4A2
16	ED-367576	D ZENER H HZS5.6B2J
17	ED-402188J	D ZENER H HZS5A3
18	ED-389688J	D ZENER H HZS5B2
19	ED-397234J	D ZENER H HZS6A2
20	ED-408733J	D ZENER H HZS6A3L
21	ED-393759J	D ZENER H HZS6B1L
22	* ED-400171J	D ZENER H HZS6C2L
23	* ED-387783J	D ZENER H HZS6C3L
24	ED-425401J	D ZENER H HZS7A2L
25	EE-422289N	FRONT END FE340-A04 3 THROW [TC-590,TC-890[E]]
26	EE-415058J	FRONT END FE417-G04 [TC-890[V]]
27	EI-419336J	IC AN8389S
28	EI-419335J	IC AN8806SB
29	EI-419334J	IC BA6247
30	EI-387938J	IC HD74LS05P
31	EI-408673J	IC LA1851N
32	EI-416515J	IC LC7073M [TC-890]
33	EI-354951	IC LM7000N
34	EI-419340J	IC MN66271RAM-MC
35	EI-425470J	IC M38184M8-134FP RX1TUCD1
36	EI-400756J	IC NJM4558L-B
37	EI-408672J	IC S-80721AN
38	EI-415159J	IC SAA6579T [TC-890]
39	EI-405224J	IC ST24C02AB1/AAB
40	EI-332259	IC TC4052BP
41	EI-408674J	OSC CE CSB456F15 19.000KHZ
42	EI-382875J	OSC CE CST4.00MGW 4MHZ [TC-890]
43	EI-418663J	OSC CE CST6.30MGW-TF01 T05
44	EI-368825M	OSC X'TAL C-002RX 32.768KHZ
45	EI-381139N	OSC X'TAL HC-49/U 16934.400KHZ
46	EI-408814M	OSC X'TAL HC-49/U 7200KHZ
47	EI-416694M	OSC X'TAL HC-49/U-S 4.33200MHZ [TC-890]
48	EJ-394490J	SOCKET OPTICAL GP1F32T
49	EM-419263M	IND FL 12-BT-83GK CHARACTER
50	ES-733205M	SW LEAF
51	ES-408754M	SW LEAF LSA-1119H
52	ES-408755M	SW LEAF LSA-2127E
53	ES-362883	SW TACT SKHHLM
54	ES-394427J	SW TACT SOR-133HS T05
55	ES-422074J	SW TACT SOR-143HS T05
56	ET-411995J	DETECTOR GP1U581X
57	ET-354370	TR DTA124ES
58	ET-354415	TR DTA144ES
59	ET-353897	TR DTC114ES
60	ET-354365	TR DTC114YS
61	ET-373485	TR DTC123JS
62	ET-375986	TR DTC124TS
63	ET-373391	TR DTC143ZS
64	ET-354414	TR DTC144ES
65	ET-354094	TR DTC144WS
66	ET-349458	TR FET 2SK192A Y
67	ET-337759	TR FET 2SK246 GR
68	ET-353899	TR 2SA1317 S,T,U
69	* ET-394495J	TR 2SA934 Q,R
70	ET-418637J	TR 2SC3000 E,F T05
71	ET-397160J	TR 2SC3330 R,S,T,U,V
72	ET-394735J	TR 2SC3792 T05
73	* ET-408842J	TR 2SD2394 E,F
74	* ET-416697J	TR 2SD2396 J,K
75	EX-425682J	THERMISTOR NTH5D222KA
76	MA-733202M	TURNTABLE CHASSIS ASSY (MB)

2. CD MECHANISM

Ref. No.	Part No.	Description
1	BM-408752M1	MOTOR RF-500TB-14415
2	MR-407764M	PULLEY (SG)
3	ES-408755M	SW LEAF LSA-2127E
4	ES-408754M	SW LEAF LSA-1119H
5	ZS-343082	PT BR26X08STL CMT
6	* BB-408757N5	MECHATRAVERSE KSM-2101ABM
7	MS-733198M	SLIDE SHAFT
8	ZG-733199M	SP COMPRESSION
9	MZ-733200M	CENTER RING (LO)
10	* BO-394728J2	PICK UP KSS-210A
11	MZ-733201M	GEAR (A)
12	MA-733202M	TURNTABLE CHASSIS ASSY (MB)
13	BM-733203M	MOTOR GEARASSY (MB)
14	EA-733204M	MOTOR P.C BOARD (6P)
15	ES-733205M	SW LEAF
16	EJ-733206M	CONNECTOR 6P
17	ZS-477876	PAN20X03STL CMT
18X	EW-408749M	WIRE ASSY YMC-02 PU1 8P
19X	EW-408750M	WIRE ASSY YMC-02 PU2 8P
20X	EW-408751M	WIRE ASSY YMC-02 TRAVERSE 6P
21-A	MB-407746M1	INSULATOR (SG)
21-B	MB-411992M1	INSULATOR(B) (SG)
22	MZ-407745M2	HOLDER TRAVERSE (SG)
23	ZW-418561M	PW21X100X100STL BZN (SG)
24	ZS-418560M	PT BID20X15STL BZN (SG)
25	ZS-407886J	BT PAN30X08STL BZN C100
26	BL-409250M	SG HOLDER GEAR PART
27	MZ-407734J1	GEAR LOADING(B)
28	MZ-407733M	GEAR LOADING(A) (SG)
29	MZ-407763J1	PULLEY GEAR
30	MB-407767M	BELT LOADING (SG)
31	MZ-410907J1	CLAMPER(B)
32	MZ-413089J	MAGNET FM30X17X5.2 4P
33	ML-407765J	LEVER SW LOADING
34	SC-407748M3	TRAY LOADING (SG)
35	BM-374198	MOTOR RF-370CA-15370
36	MZ-407740J	WORM TABLE
37	MZ-407739M	GEAR WORM WHEEL TABLE (SG)
38	MZ-407737M	GEAR TABLE(A) (SG)
39	MZ-407738M	GEAR TABLE(B) (SG)
40	ES-408758M	SW LEVER SSCTL-S-R
41	ZG-407741M	SP PLATE HOLDER DISK (SG)
42	ML-407742M2	LEVER SW (SG)
43	SZ-407750M	COVER GEAR (SG)
44	MZ-411049M	HOLDER DISK(B) (SG)
45	ZW-396336M	PW30X150X080STL CMT (SG)
46	ZS-394414J	BT BID30X08STL BZN
47	MR-407755M	ROLLER (SG)
48	MS-411215J	SHAFT WORM
49	ZS-390395J	BT BID20X10STL BZN
50	ZW-413013J	PW125X195X025PSL

NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

3. P.C. BOARD BLOCK

Ref. No.	Part No.	Description
1-A	BA-A6015T040E	ML PC TU-CD BLK TC-590(U)/ML [U] [TC-590]
1-B	BA-A6015T040A	ML PC TU-CD BLK TC-590(E)/ML [E,S] [TC-590]
1-C	BA-A6015T040D	ML PC TU-CD BLK TC-890(E)/ML [E] [TC-890]
1-D	BA-A6015T040G	ML PC TU-CD BLK TC-890(V)/ML [V] [TC-890]
2-A	BA-A6016T050B	ML PC#SYS890 BLK TC-590(U)/ML [U,S] [TC-590]
2-B	BA-A6016T050A	ML PC#SYS890 BLK TC-590(E)/ML [E] [TC-590]
2-C	BA-A6016T050C	ML PC#SYS890 BLK TC-890(E)/ML [E] [TC-890]
2-D	BA-A6016T050D	ML PC#SYS890 BLK TC-890(V)/ML [V] [TC-890]

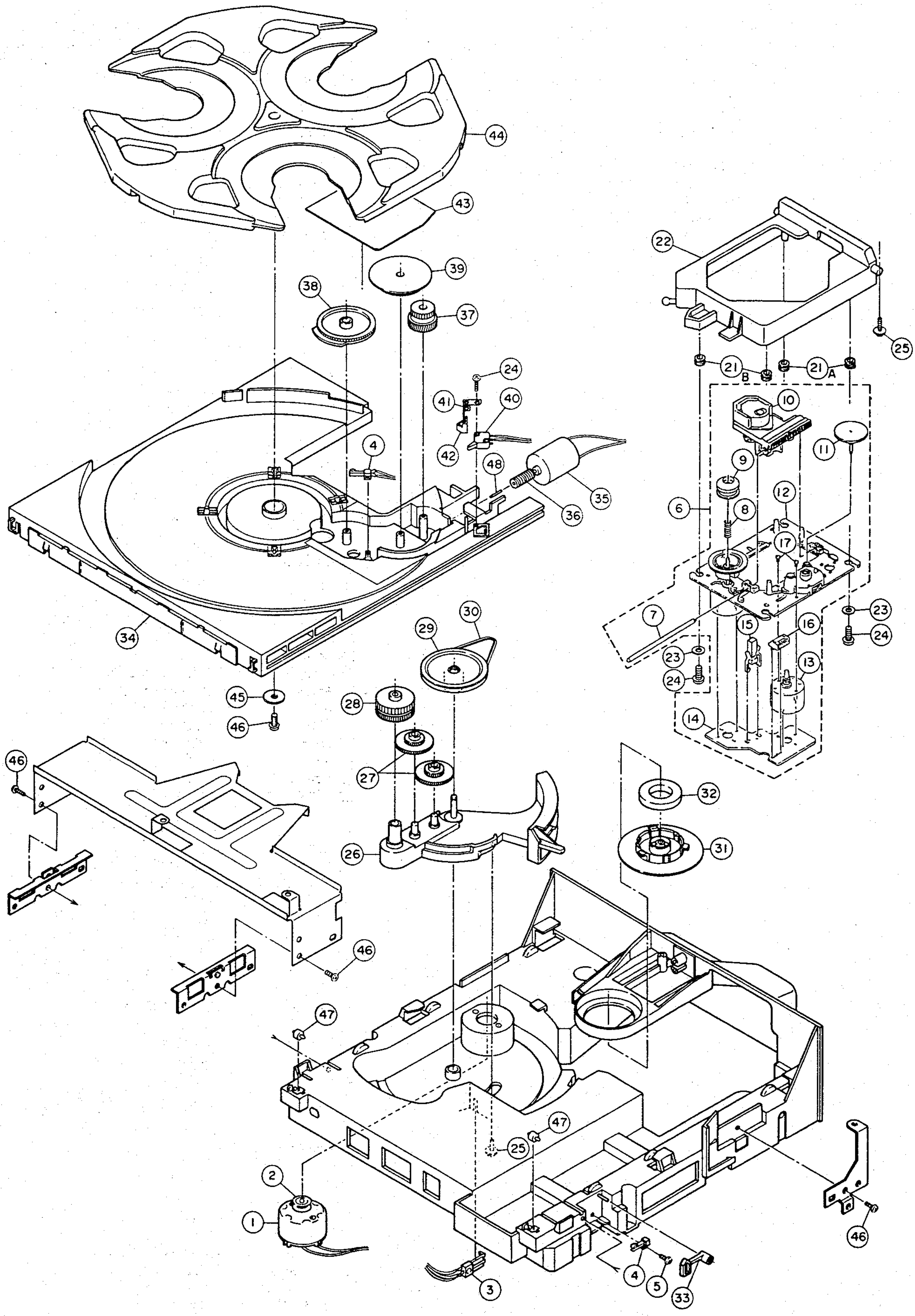
PC (#) SYS BLOCK CONSISTS OF FOLLOWING P.C. BOARDS.

- ✱ SYSCON P.C. BOARD
- ✱ OPERATION P.C. BOARD
- ✱ DIGITAL OUT P.C. BOARD

4. TU-CD P.C. BOARD

Ref. No.	Part No.	Description
C300	EC-324662	C EC V CUT AS1 222M 25.0DC
C510	EC-422050J	C DBL LAYER EECS5R5V 105 5.5DC
D1	ED-307572	D SILICON H 1SS131
D31	ED-372893	D VARACTOR SVC321SPA A DBL
D32	ED-372893	D VARACTOR SVC321SPA A DBL
D33	ED-307572	D SILICON H 1SS131
D34	ED-307572	D SILICON H 1SS131
D61	ED-367576	D ZENER H HZS5.6B2J
D62	ED-307572	D SILICON H 1SS131
D63	ED-307572	D SILICON H 1SS131
D64	ED-307572	D SILICON H 1SS131
D66	ED-389688J	D ZENER H HZS5B2
D290	ED-425401J	D ZENER H HZS7A2L
D291	ED-402188J	D ZENER H HZS5A3
D292	ED-397175J	D ZENER H HZS4A2
D293	ED-402181J	D ZENER H HZS3A1
D294	ED-408733J	D ZENER H HZS6A3L
D300	✱ED-511907	D SILICON 1N4002 100/1.0A
D301	✱ED-511907	D SILICON 1N4002 100/1.0A
D302	✱ED-511907	D SILICON 1N4002 100/1.0A
D303	✱ED-511907	D SILICON 1N4002 100/1.0A
D304	✱ED-418676J	D ZENER H HZS11C2L T26
D305	✱ED-418687J	D ZENER H HZS11A1L T26
D306	✱ED-387783J	D ZENER H HZS6C3L
D307	ED-393759J	D ZENER H HZS6B1L
D308	✱ED-387783J	D ZENER H HZS6C3L
D309	ED-307572	D SILICON H 1SS131
D310	ED-307572	D SILICON H 1SS131
D311	✱ED-396363J	D ZENER H HZS11B3
D312	ED-397234J	D ZENER H HZS6A2
D313	ED-307572	D SILICON H 1SS131
D314	✱ED-402202J	D ZENER H HZS11A1
D315	✱ED-400171J	D ZENER H HZS6C2L
D316	✱ED-511907	D SILICON 1N4002 100/1.0A
D317	✱ED-511907	D SILICON 1N4002 100/1.0A
D318	✱ED-511907	D SILICON 1N4002 100/1.0A
D319	✱ED-511907	D SILICON 1N4002 100/1.0A
D320	✱ED-511907	D SILICON 1N4002 100/1.0A
D500	✱ED-511907	D SILICON 1N4002 100/1.0A
D501	ED-307572	D SILICON H 1SS131
D502	ED-307572	D SILICON H 1SS131
D503	ED-307572	D SILICON H 1SS131
D504	ED-307572	D SILICON H 1SS131
D505	ED-307572	D SILICON H 1SS131
D506	ED-307572	D SILICON H 1SS131
D507	ED-307572	D SILICON H 1SS131
D508	ED-307572	D SILICON H 1SS131
D509	ED-307572	D SILICON H 1SS131
FE1-A	EE-422289N	FRONT END FE340-A04 3 THROW [TC-590,TC-890[E]]
FE1-B	EE-415058J	FRONT END FE417-G04 [TC-890[V]]
FL2-A	EH-394759J	FILTER CE SFE10.7MS2GK-A [TC-590,TC-890[E]]
FL2-B	EH-338338	FILTER CE SFE10.7MS3GK-A [TC-890[V]]
FL3-A	EH-394759J	FILTER CE SFE10.7MS2GK-A [TC-590,TC-890[E]]
FL3-B	EH-338338	FILTER CE SFE10.7MS3GK-A [TC-890[V]]
FL4	EH-405199J	FILTER LC LP K7-J1YD-0170 [TC-890[V]]
FL51	EH-408815J	FILTER LC LP 42B-5226-03
FL52	EH-408815J	FILTER LC LP 42B-5226-03
IC1	EI-408673J	IC LA1851N
IC61	EI-354951	IC LM7000N
IC93	EI-415159J	IC SAA6579T [TC-890]
IC94	EI-416515J	IC LC7073M [TC-890]
IC200	EI-419335J	IC AN8806SB
IC230	EI-419340J	IC MN66271RAM-MC
IC250	EI-419336J	IC AN8389S
IC270	EI-400756J	IC NJM4558L-B
IC290	EI-419334J	IC BA6247

CD MECHANISM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Ref. No.	Part No.	Description
IC400	EI-332259	IC TC4052BP
IC401	EI-400756J	IC NJM4558L-B
IC402	EI-400756J	IC NJM4558L-B
IC500	EI-408672J	IC S-80721AN
IC501	EI-387938J	IC HD74LS05P
J230	EJ-394490J	SOCKET OPTICAL GP1F32T
J300	EW-408676J	WIRE ASSY HFG07157601 L580 15P
L1	EO-357539	COIL FIX 1 EL0606RA T05 222K
R8	ER-422082N	R CB H S10FLR 25FJ 1/4W 223J
R290	ER-382474J	R OMF H S10 FS 1/2W 1R2J
R308	* ER-418750J	R OMF V T05FS ERG1SE 1W 330J
R309	* ER-418751J	R OMF V T05 FS ERX1SE 1W R62J
T1	EO-422336N	COIL DET1 292TEAS3741Z 10.7MHZ
T2	EO-416498J	COIL IFT K7-H5 10.7MHZ
T31	EO-416501M	COIL VARI 2 MRHNF-45669A
T32	EO-416502M	COIL VARI 2 MRZNF-45670A
T33	EO-363279	COIL OSC 2 A7NRS-9857X 150.0UH
T34	EO-352089	COIL OSC 2 7BRS-9098X 580.0UH
T35	EO-408687J	COIL IFT BCFAZ-024
TH250	EX-425682J	THERMISTOR NTH5D222KA
TM1	EJ-359031	TERMINAL LEVER YKD31-0215 P 2P
TR1	ET-418637J	TR 2SC3000 E,F T05
TR2	ET-397160J	TR 2SC3330 R,S,T,U,V
TR32	ET-394735J	TR 2SC3792 T05
TR33	ET-353897	TR DTC114ES
TR35	ET-349458	TR FET 2SK192A Y
TR61	ET-337759	TR FET 2SK246 GR
TR62	ET-397160J	TR 2SC3330 R,S,T,U,V
TR63	ET-354094	TR DTC144WS
TR64	ET-354094	TR DTC144WS
TR65	ET-354094	TR DTC144WS
TR66	ET-353899	TR 2SA1317 S,T,U
TR67	ET-353899	TR 2SA1317 S,T,U
TR200	ET-353899	TR 2SA1317 S,T,U
TR250	ET-375986	TR DTC124TS
TR251	ET-375986	TR DTC124TS
TR290	ET-354365	TR DTC114YS
TR291	ET-354365	TR DTC114YS
TR292	ET-354365	TR DTC114YS
TR293	ET-354365	TR DTC114YS
TR301	* ET-416697J	TR 2SD2396 J,K
TR302	ET-373391	TR DTC143ZS
TR303	* ET-408842J	TR 2SD2394 E,F
TR304	ET-397160J	TR 2SC3330 R,S,T,U,V
TR305	* ET-408842J	TR 2SD2394 E,F
TR306	ET-354414	TR DTC144ES
TR307	* ET-394495J	TR 2SA934 Q,R
TR308	* ET-408842J	TR 2SD2394 E,F
TR309	ET-354414	TR DTC144ES
TR310	* ET-408842J	TR 2SD2394 E,F
TR311	* ET-353899	TR 2SA1317 S,T,U
TR312	ET-354414	TR DTC144ES
TR400	ET-397160J	TR 2SC3330 R,S,T,U,V
TR401	ET-397160J	TR 2SC3330 R,S,T,U,V
TR402	ET-354415	TR DTA144ES
TR403	ET-354094	TR DTC144WS
TR500	ET-353897	TR DTC114ES
TR501	ET-354370	TR DTA124ES
TS500	ES-362883	SW TACT SKHHLM
VC31	EC-337603	C S-FIX H VCT51F 5.5-30
VC32	EC-356284	C S-FIX H VCT51G 7.5- 50
VR1	EV-389479J	R S-FIX H T05EVNDXAA03 0.1W223
VR2	EV-389476J	R S-FIX H T05EVNDXAA03 0.1W103
VR3	EV-389489J	R S-FIX H T05EVNDXAA03 0.1W472
X1	EI-408674J	OSC CE CSB456F15 19.000KHZ
X61	EI-408814M	OSC X'TAL HC-49/U 7200KHZ
X92	EI-416694M	OSC X'TAL HC-49/U-S 4.33200MHZ [TC-890]
X93	EI-382875J	OSC CE CST4.00MGW 4MHZ [TC-890]
X230	EI-381139N	OSC X'TAL HC-49/U 16934.400KHZ

5. SYSCON P.C. BOARD

Ref. No.	Part No.	Description
D1	ED-418635J	D LED SEL6415E(C,D) GREEN
D2	ED-418635J	D LED SEL6415E(C,D) GREEN
D3	ED-418635J	D LED SEL6415E(C,D) GREEN
IB1	EH-422066J	COMP R RGLE8T 473J
IB2	EH-422064J	COMP R RGLE6T 333J
IB3	EH-408821J	COMP R RGLE12T 473J
IB4	EH-408821J	COMP R RGLE12T 473J
IC1	EI-425470J	IC M38184M8-134FP RX1TUCD1
IC2	EI-405224J	IC ST24C02AB1/AAB
IN1	EM-419263M	IND FL 12-BT-83GK CHARACTER
PH1	ET-411995J	DETECTOR GP1U581X
R1	ER-365753	R MF H RK14 1/4W 226J
TR1	ET-373485	TR DTC123JS
TR2	ET-373485	TR DTC123JS
TR3	ET-373485	TR DTC123JS
TS1	ES-394427J	SW TACT SOR-133HS T05
TS2	ES-394427J	SW TACT SOR-133HS T05
TS3	ES-394427J	SW TACT SOR-133HS T05
TS4	ES-394427J	SW TACT SOR-133HS T05
TS5	ES-394427J	SW TACT SOR-133HS T05
TS6	ES-394427J	SW TACT SOR-133HS T05
TS7	ES-394427J	SW TACT SOR-133HS T05
TS8	ES-394427J	SW TACT SOR-133HS T05
TS9	ES-394427J	SW TACT SOR-133HS T05
TS10	ES-394427J	SW TACT SOR-133HS T05
TS11	ES-422074J	SW TACT SOR-143HS T05
TS12	ES-422074J	SW TACT SOR-143HS T05
TS13	ES-394427J	SW TACT SOR-133HS T05
TS14	ES-394427J	SW TACT SOR-133HS T05
TS15	ES-394427J	SW TACT SOR-133HS T05
TS16	ES-394427J	SW TACT SOR-133HS T05
TS17	ES-394427J	SW TACT SOR-133HS T05
X1	EI-418663J	OSC CE CST6.30MGW-TF01 T05
X2	EI-368825M	OSC X'TAL C-002RX 32.768KHZ

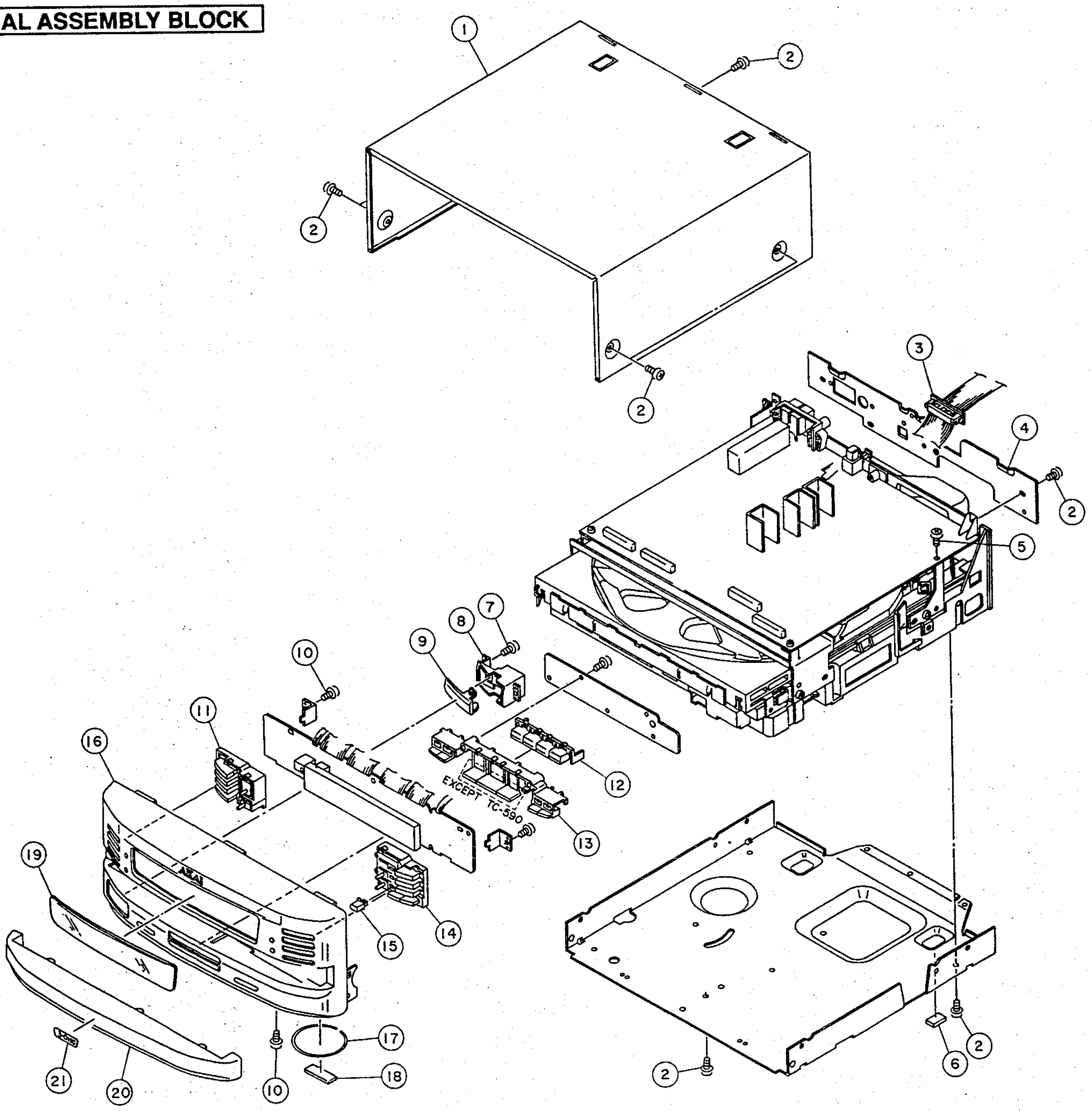
6. OPERATION P.C. BOARD

Ref. No.	Part No.	Description
TS100	ES-422074J	SW TACT SOR-143HS T05
TS101	ES-422074J	SW TACT SOR-143HS T05
TS102	ES-422074J	SW TACT SOR-143HS T05
TS103	ES-422074J	SW TACT SOR-143HS T05
TS104	ES-422074J	SW TACT SOR-143HS T05 [TC-890]
TS105	ES-422074J	SW TACT SOR-143HS T05 [TC-890]
TS106	ES-422074J	SW TACT SOR-143HS T05 [TC-890]
TS107	ES-422074J	SW TACT SOR-143HS T05
TS108	ES-422074J	SW TACT SOR-143HS T05
TS109	ES-422074J	SW TACT SOR-143HS T05
TS110	ES-422074J	SW TACT SOR-143HS T05

7. DIGITAL OUT P.C. BOARD

Ref. No.	Part No.	Description
J200	EJ-394490J	SOCKET OPTICAL GP1F32T

FINAL ASSEMBLY BLOCK



8. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
1	SP-420669M	COVER UPPER (SG)
2	ZS-394412J	BT BID30X08STL BZN PROJECTION
3	SZ-407909M	WIRE HOLDER (SG)
4	SP-420670M	PANEL REAR (SG)
5	ZS-331181	BT BID30X08STL NI3
6	SA-407840M	CUSHION FOOT REAR (SG)
7	ZS-393515J	BT BID30X10STL BZN
8	SZ-419958M	HOLDER DOOR (SG)
9	SP-419945M	DOOR (SG)
10	ZS-394414J	BT BID30X08STL BZN
11	SB-420667M	BUTTON TIMER(2) (SG)
12	SB-420649M	BUTTON TUNING(B) (SG)
13-A	SB-419919M	BUTTON FUNCTION TC(2) (SG) [590]
13-B	SB-419918M	BUTTON FUNCTION TC(1) (SG) [890]
14	SB-420665M	BUTTON DISC (SG)
15	SE-420666M	LENS DISC (SG)
16-A	SP-421783M	PANEL FRONT TC-590 (SG)
16-B	SP-420664M	PANEL FRONT TC-890 (SG)
17	SZ-419923M	RING FOOT(1) (SG)
18	SA-394136M	CUSHION FOOT (SG)
19	SE-420668M	WINDOW FLD-TC(2) (SG)
20	SP-419943M	COVER TRAY (SG)
21	SM-419941J	NAME PLATE 3D(2)

NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

9. ACCESSARY

Ref. No.	Part No.	Description
1	AX-415039M	ANT LOOP WAU0990-0172M
2	EE-396107M	ANT WIRE FMA3063
3	EJ-394417J	SOCKET COAX HXC 0526-01-010

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BAA6016T050A	3-2-B
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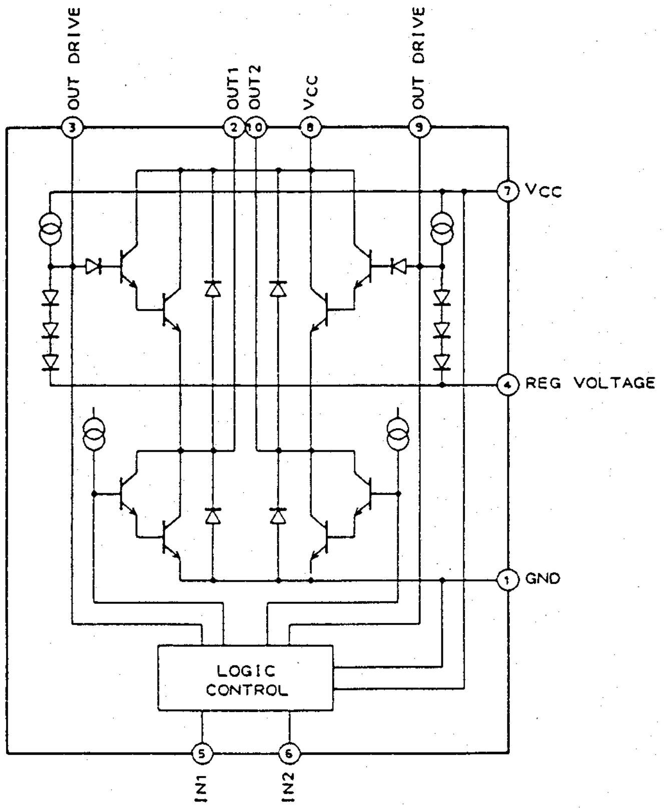
ABBREVIATIONS (COMPACT DISC)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A-D	Analog to Digital (Convertor)	Mb	Mega Bits
ADC	Analog to Digital (Convertor)	MDA	Mortor Drive Amplifier
BCD	Binary Code Decimal	MFM	Modified Frequency Modulation
BPI	Bits per Inch	MM	Mono-stable Multivibrator
CD	Compact Disc	M^{2}FM	Modified Modified Frequency Modulation
CIRC	Cross Interleaving & Reed Solomon Coding	MOD2	Modulo 2 (Addition)
CLV	Constant Linear Velocity	MP	Microprocessor
CP	Clock Pulses	MSB	Most Significant Bit
CRCC	Cyclic Redundancy Check Codes	NA	Numerical Aperture
D Level	Decision Level	NRZ	Non Return to Zero
D-A	Digital to Analog (Convertor)	NRZ-1	Non Return to Zero Inverted
DAC	Digital to Analog (Convertor)	P	Parity Data
DAD	Digital Audio Disc	PAM	Pulse Amplitude Modulation
DEM	Dynamic Element Matching	PCM	Pulse Code Modulation
DPD	Differential Phase Detection	PD	Phase Detector
DSV	Digital Sum Value	PE	Phase Encode
EFM	Eight to fourteen Modulation	PLL	Phase Locked Loop
EX-OR	EXclusive OR	PNM	Pulse Number Modulation
FCI	Flux Changes per Inch	PPM	Pulse Phase Modulation
FIR	Finite Impulse Response	PWM	Pulse Width Modulation
FP	Front Pulse	Q	Parity Data
FPG	Front Pulse Gate	R, R_1, R_2, etc.	Data for Right Channel
f	Frequency of Sampling	RAM	Random Access Memory
GF	Galois Field	RPG	Rear Pulse Gate
H & V (Parity)	Horizonal & Vertical	SCOOP	Self Coupled Optical Pick-up
IIR	Infinite Impulse Response	S & H	Sample & Hold
kb	Kilo Bits	S/N	Signal to Noise Ratio
L, L_1, L_2, etc.	Data for Left Channel	SSG	Standard Signal Generator
LPF	Low Pass Filter	SYSCON	SYStem CONtrol
LSB	Least Significant Bit		

ABBREVIATIONS (TUNER)

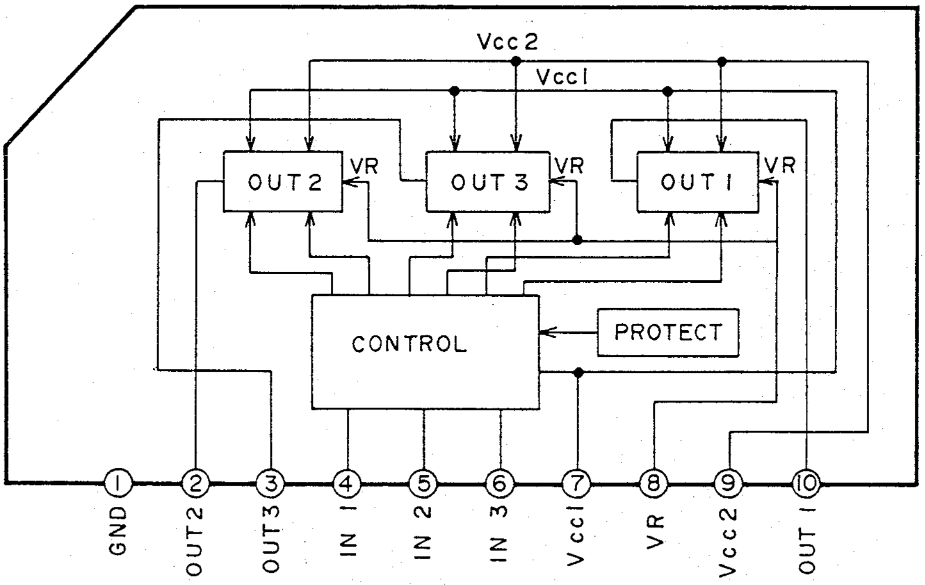
ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
AFC	Auto Frequency Control	MEMO	MEMOry
AGC	Auto Gain Control	MI-COM	MIcro-COMputer
ALC	Auto Level Control	MIN	MINimum
AM	Amplitude Modulation	MIX	MIXing
AMP	AMPlifier	MPX	Multi pleX
ANT	ANTenna	MW	Medium Wave (frequency)
BATT	BATTery	NC	No Connection
BLK	BLocK	NFB	Negative Feed Back
BUFF	BUFFer	OSC	OSCillator
COMP	COMPalator	PCB	Printed Circuit Board
DET	DETect (DETctor)	PLL	Phase Locked Loop
FLD	FLuorescent Display	Q.D	Quadrature Detector
FM	Frequency Modulation	Rch	Right channel
FREQ	FREQuency	REF	REFerence
GND	GrouND	REG	REGulator
H	Hight	RF	Radio Frequency
HPF	Hight Pass Filter	SEG	SEGment
IF	Intermediate Frequency	SELE	SELEctor
IHF	Institut of High Fidelity	SENS	SENSitivity
IND	INDicator	SIG	SIGnal
I/O	In/Out	S/N	Signal to Noise Ratio
JW	Jumper Wire	SSG	Standard Signal Generator
L	Low	STD	STanDard
LCD	Liquid Crystal Display	SW	SWitch: Short Wave (frequency)
Lch	Left channel	THD	Total Harmonic Distortion
LED	Light Emiting Diode	TP	Test Point
LPF	Low Pass Filter	VCO	Voltage Controlled Cscillator
LW	Long Wave (Frequency)	VR	Variable Resistor
		X'TAL	Crystal

BA6229 (BI-DIRECTIONAL MOTOR DRIVE)


OUT DRIVE
OUT1
OUT2
Vcc
OUT DRIVE
3
2
10
8
9
7
Vcc
4
REG VOLTAGE
1
GND
LOGIC CONTROL
5
6
IN1
IN2

INPUT		OUTPUT		MODE
⑤	⑥	②	⑩	
H	H	L	L	BRAKE
L	H	L	H	CASSETTE & TAPE LOADING
H	L	H	L	CASSETTE & TAPE UNLOADING
L	L	OPEN	OPEN	STOP

BA6247 (REVERSIBLE MOTOR DRIVE)


Vcc 2
Vcc l
OUT 2
VR
OUT 3
VR
OUT I
VR
CONTROL
PROTECT
1
2
3
4
5
6
7
8
9
10
GND
OUT 2
OUT 3
IN 1
IN 2
IN 3
Vcc l
VR
Vcc 2
OUT I

IN PUT			OUT PUT		
IN1	IN2	IN3	OUT1	OUT2	OUT3
L	L	L H	L	L	L
H	L	L	H	L	OPEN
H	L	H	L	H	OPEN
L	H	L	H	OPEN	L
L	H	H	L	OPEN	H
H	H	L H	L	L	L

M38184M8 (AX-890 SYSTEM CONTROL MI-COM)

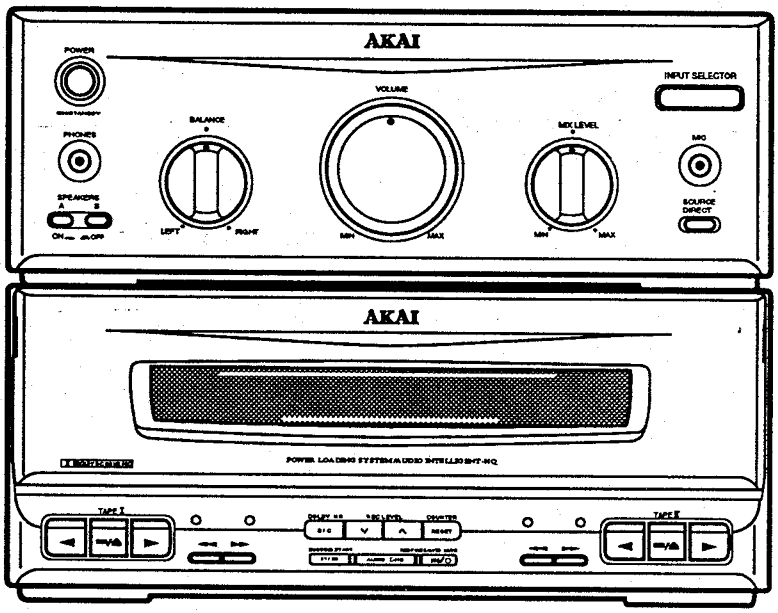
Pin No.	PORT NAME	I/O	FUNCTION
1,86-88, 97-100	–	–	To be grounded
2,6,19, 64-66	–	–	Not used
3	EA BUSY	O	Reset signal output to G.EQ MI-COM
4	EA CLK	O	Clock output to G.EQ MI-COM
5	EA DATA OUT	O	Data output to G.EQ MI-COM
7	TC BUSY	O	Output for bus request to CD/tuner block
8	TC CLK	I	Bus clock input from CD/tuner block
9	TC DATA OUT	O	Bus serial data output to CD/tuner block
10	TC DATA IN	I	Bus serial data input from CD/tuner block
11	MIC OUTPUT	O	Input switch control for mic signal (MIC ON : H)
12	INPUT SW A	I	Input switch control signal A
13	INPUT SW B	I	Input switch control signal B
14	OUTPUT SW A	O	Output switch control signal A
15	OUTPUT SW B	O	Output switch control signal B
16	OUTPUT SW C	O	Output switch control signal C
17	MIC INPUT	I	Input from microphone jack's switch
18	EEPROM DATA	I/O	EEP ROM serial data IN/OUT
20	SOURCE DIRECT LED	O	SOURCE DIRECT LED conttrol output
21	SOURCE DIRECT KEY	I	SOURCE DIRECT command input
22	VR DOWN	O	Main VR control (DOWN) output
23	VR UP	O	Main VR control (UP) output
24	AMP MUTE	O	Pre AMP mute control output (H : mute)
25	EEP ROM CLK	O	Serial clock output to EEP-ROM
26	VR LED	O	Main VR LED control output
27	TEST TONE 400Hz	O	400 Hz test signal output for I-HQ calibration
28	TEST TONE 10 kHz	O	10 kHz test signal output for I-HQ calibration
29	INPUT SELECT KEY	I	Input select switch (CD → TUNER → TAPE1 → TAPE2 → PHONO → LINE)
30	POWER ON/OFF KEY	I	Power switch key input
31	POWER $\overline{\text{ON}}$/OFF	O	Power ON/OFF control output (H : power off)
32	INPUT MUTE	O	REC input mute control (L : mute)
33	POWER MUTE	O	Power AMP mute control output (H : mute on)
34	PROTECT	I	Input for detection of PROTECT operation
35	$\overline{\text{RESET}}$	I	Reset signal input (L : reset)
36	XCIN	I	Not used
37	XCOUT	O	
38	XOUT	O	X'tal connecting pin
39	XIN	I	
41	PB MUTE	O	Playback mute control output (H : mute)
42	FL SCK	O	Serial clock output to FLD MI-COM
43	2METAL	I	Tape 2 metal tape detect switch input
44	2 AR.R	I	Tape 2 reverse recording inhibit input
45	2 120/70	I	Tape 2 120 μs/70 μs tape detect input (L : 120 μs)
46	2 PLAY	I	Tape 2 head position detect input
47	2 PACK	I	Tape 2 pack detect input
48	2 AR.F	I	Tape 2 forward recocding inhibit input
49	1 PACK	I	Tape 1 pack detect input
50	1 120/70	I	Tape 1 120 μs/70 μs tape detect input (L : 120 μs)
51	1 PLAY	I	Tape 1 head position detect input
52	2 PULSE	I	Tape 2 reel pulse input
53	1 PULSE	I	Tape 1 reel pulse input
54	CLK (DOLBY)	O	Serial clock out to DOLBY IC
55	$\overline{\text{REC}}$/PB	O	Head REC/PB control output (H : PB)
56	$\overline{\text{PL COM}}$	O	Plunger ON/OFF (common) control output (L : active)
57	1 PL	O	Tape 1 plunger ON/OFF control output (H : active)
58	1 CAP x1/$\overline{\text{x2}}$	O	Tape 1 capstan motor x1/x2 speed switching output (H : x1, L : x2)

(DATA/SERVO PROCESSOR)

PORT NAME	I/O	FUNCTION
BCLK	O	Bit clock output for SR DATA
LRCK	O	L/R identify signal output
SRDATA	O	Serial data output
DVDD1	I	Power supply for digital circuit
DVSS1	–	Ground for digital circuit
TX	O	Digital audio interface output signal
MCLK	I	MI-COM command clock signal input
MDATA	I	MI-COM command data input
$\overline{MLD}$	I	MI-COM command load signal input (L : load)
SENSE	O	Sense signal output
$\overline{FLOCK}$	O	Focus servo lock signal output (L : locked)
$\overline{TLOCK}$	O	Tracking servo lock signal (L : locked)
BLKCK	O	Subcode block clock signal output
SQCK	I	External clock input for subcode resistor
SUBQ	O	Subcode Q code output
$\overline{DMUTE}$	I	Muting input (H : mute)
STAT	O	Status signal output
$\overline{RST}$	I	Reset input(L:reset)
SMCK	O	Clock signal output MSEL = H : 8.4672 MHz, MSEL = L : 4.2336 MHz
PMCK	O	88.2KHz clock signal output
TRV	O	Traverse(sled motor) forced delivery output
TVD	O	Traverse(sled motor) drive output
$\overline{PC}$	O	Spindle motor on/off control (L : on)
ECM	O	Spindle motor drive signal output (forced mode output)
ECS	O	Spindle motor drive signal output (servo error signal output)
ICK	O	Kick pulse output
RD	O	Tracking drive output
OD	O	Focus drive output
REF	I	Reference voltage for DA output section
BAL	O	Focus balance adjustment output
BAL	O	Tracking balance adjustment output
	I	Focus error signal input (analog)
	I	Tracking error signal input (analog)
FNV	I	RF envel ope signal input (analog)
ET	I	Vibration detect signal input (H : detect)
T	I	Off track signal input (H : off track)
CRS	I	Track cross signal input
$\overline{DET}$	I	RF detection signal input (L : detect)
O	I	Dropout signal input (H : drop out)
ON	O	Laser on/off control output
	O	Tracking error shunt signal output (H : shunt)
Y	O	Play signal output (H : play)
EL	O	Double speed status signal output
	I	RF signal input
	I	Reference current input pin
	I	Bias pin for DSL
	I/O	Loop filter pin for DSL
	I/O	Loop filter pin for PLL
	I/O	Loop filter pin for VCO
2	I	Power supply for analog circuit
2	–	Ground for analog circuit
	O	EFM signal output
	O	PLL extraction clock output
	O	Phase comparison output between EFM signal and PCK signal
	O	Sub code serial data output
	O	Clock input for sub code serial output
	–	Ground for OSC circuit

M38184M8 (AX-890 SYSTEM CONTROL MI-COM)

Pin No.	PORT NAME	I/O	FUNCTION
59	2 CAP x1/$\overline{\text{x2}}$	O	Tape 2 capstan motor x1/x2 speed switching output (H : x1, L : x2)
60	CAP $\overline{\text{ON}}$/OFF	O	Capstan motor ON/OFF control output (L : on)
61	RESET(DOLBY)	O	DOLBY IC reset output
62	STB(DOLBY)	O	Strobe pulse output to DOLBY IC
63	DATA(DOLBY)	O	Serial data output to DOLBY IC
65	DOLBY ON/OFF	O	DOLBY ON/OFF control output (L : off)
67	2 PL	O	Tape 2 plunger ON/OFF control output (H : active)
68	x2 PB 70 µs	O	x1/x2 speed playback EQ switching output (H : x2 70 µs)
69	x1 PB 70 µs	O	x1/x2 speed playback EQ switching output (H : x1 70 µs or x2 120 µs)
70	$\overline{\text{x2 PB PEAK}}$	O	x1/x2 PB peaking frequency select (H : x1)
71	CrO2	O	For erasing OSC level control
72	NORMAL	O	
73	OSC ON/$\overline{\text{OFF}}$	O	Erasing OSC control output (H : OSC ON)
74	FL ON/$\overline{\text{OFF}}$	O	Output for turning the FLD filamant power ON/OFF control
75	FL NCS	O	Output to FLD MI-COM control
76	FL SDI	I	Key input from FLD MI-COM
77	FL SDO	O	Serial data out to FLD MI-COM
78	2 CLOSE SW	I	Input to detect tape 2 cassette holder close position (H : close)
79	2 OPEN SW	I	Input to detect tape 2 cassette holder open position (H : open)
80	$\overline{\text{2 REV MOTOR}}$	O	Tape 2 EJECT motor direction control (reverse)
81	$\overline{\text{2 FWD MOTOR}}$	O	Tape 2 EJECT motor direction control (forward)
82	1 CLOSE SW	I	Input to detect tape 1 cassette holder close position (H : close)
83	1 OPEN SW	I	Input to detect tape 1 cassette holder open position (H : open)
84	$\overline{\text{1 REV MOTOR}}$	O	Tape 1 EJECT motor direction control (reverse)
85	$\overline{\text{1 FWD MOTOR}}$	O	Tape 1 EJECT motor direction control (forward)
89	VEE	–	To be grounded
90	PB1	–	
91	VCC	–	Connect to +5 V power supply
94	VREF	–	
95	METER R (A/D)	I	Input for carrying out level meter detection
96	METER L (A/D)	I	



STEREO DECK AMPLIFIER

MODEL AX-890

SPECIFICATIONS

[Amplifier section]

Power output	76 W + 76 W (6 ohms, 10 % THD, EIAJ) 60 W + 60 W (6 ohms, 1 % THD, DIN) 53 W + 53 W (8 ohms, 1 % THD, DIN) 52 W + 52 W (6 ohms, 0.5 % THD, 60 Hz ~ 20 kHz, FTC)
Frequency response	10 Hz to 100 kHz (10 Hz : –4 dB, 100 kHz : –3 dB)
Required speaker impedance	6 to 16 ohms (A or B) 12 to 16 ohms (A + B)
Input Sensitivity	
PHONO	3.2 mV / 47 k ohms
LINE	220 mV / 22 k ohms
Line output level	220 mV / 1 k ohms
S/N ratio	
PHONO	70 dB (A-weight)
Except PHONO	90 dB (A-weight)
Residual noise	0.08 mV (A-weight)
Channel separation	70 dB

[DECK section]

Track system	4 track 2 channel system
Wow & Flutter	0.09 % (WRMS), 0.15 % (DIN)
Frequency response	
Normal	30 Hz to 15 kHz ± 3 dB
CrO2	30 Hz to 16 kHz ± 3 dB
Metal	30 Hz to 18 kHz ± 3 dB
S/N ratio	
Dolby C	73 dB (1 kHz to 10 kHz)
Dolby B	63 dB (5 kHz)
Dolby off	53 dB (CrO2 tape)
Total harmonic distortion	Less than 0.5 % (normal tape, at 315 Hz)
Channel separation	43 dB (normal tape)

[General]

Power requirements	AC 220 V to 230 V, 50Hz for Europe except U.K. AC 110 / 127 / 220 to 230 / 240 V, 50 / 60 Hz convertible for other countries
Power consumption	150 W (nominal 120 W)(with TC-590/890 & EA-890) 130 W (nominal 106 W)
Dimensions	270 (W) x 209 (H) x 315 (D) mm
Weight	8.3 kg

Standard accessories

Remote control unit	x 1
Batteries	x 2
Operator's manual	x 1

* For improvement purposes, specifications and design are subject to change without notice.

* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX-Pro originated by Bang & Olufsen.

* The "DOLBY" and double-D symbol ▯▯ and "HX-Pro are trademarks of Dolby Licensing Corporation.

SERVICE MANUAL

I. DISASSEMBLY

In case of trouble etc., necessitating dismantling, please dismantle in the order shown in the illustrations.
Reassemble in the reverse order.

※ If the CASSETTE MECHA. BLOCK removal is intended, press both the "EJECT" buttons on the FRONT PANEL to open the cassette holders and cassette door before proceeding.

1-1. Removal of the UPPER COVER

1) Remove the four screws on the sides and seven screws on the back.

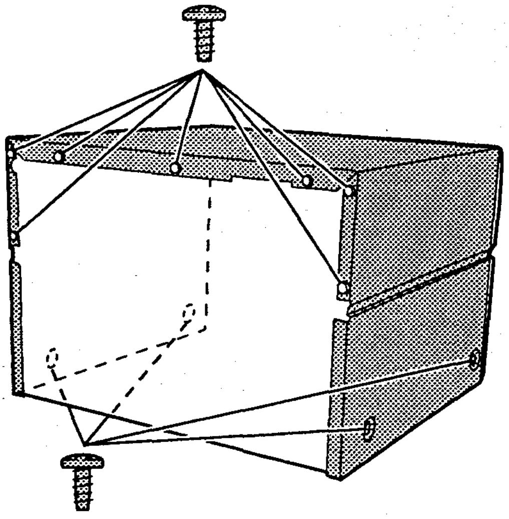


Fig. 1-1

1-2. Removal of the FRONT PANEL BLOCK

1) Remove the five screws on the bottom.

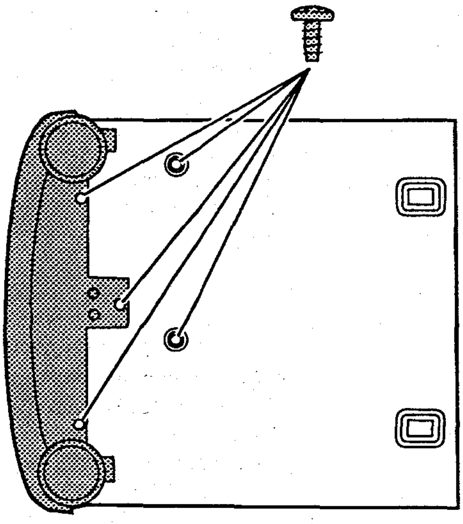


Fig. 1-2

2) Remove the four screws on both sides.

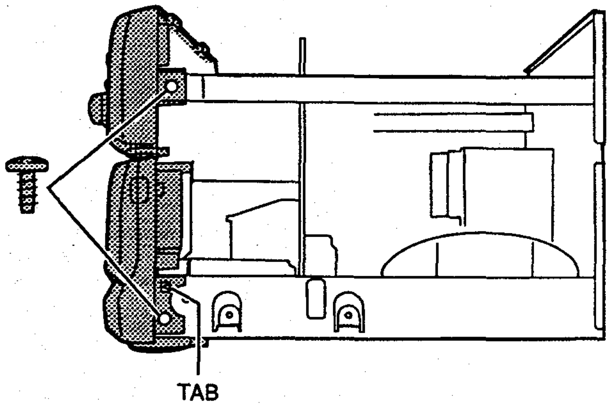


Fig. 1-3

3) Disconnect the flat cables from the J3, J4 and J5 connectors and the shield wires from the J7 and J8 connectors on the INPUT PCB.

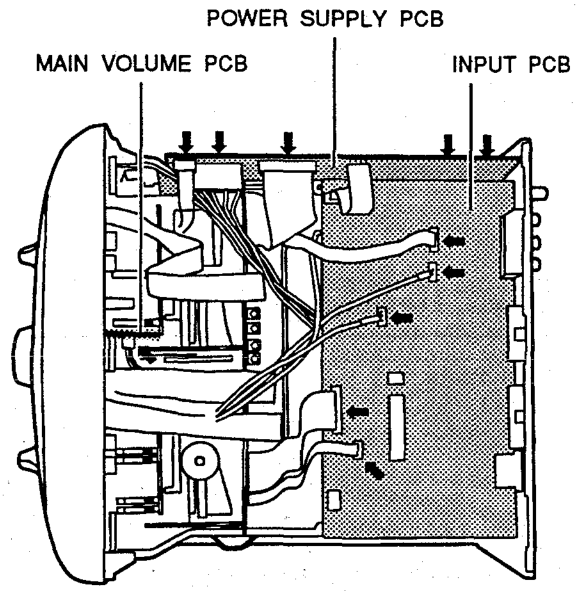


Fig. 1-4

4) Disconnect the flat cables from the J10 and J15 connectors on the POWER SUPPLY PCB and also disconnect the P11 and P12 connectors at the lower side of the POWER SUPPLY PCB.
5) Disconnect the P13 connector on the MAIN VOLUME PCB.
6) Disconnect the P5 connector and remove the two screws on the POWER SUPPLY PCB. Next, release the hooks on both sides of the FRONT PANEL, then pull the FRONT PANEL BLOCK out with care. When pulling the FRONT PANEL BLOCK out, press the POWER SUPPLY PCB to the left to avoid the fuses touching the DECK PCB.

1-3. Removal of the CASSETTE MECHA. BLOCK

1-3-1. Removal of the DECK PCB

1) Disconnect the flat cables from the J601 and J602 connectors while pushing the stoppers of the connectors down.

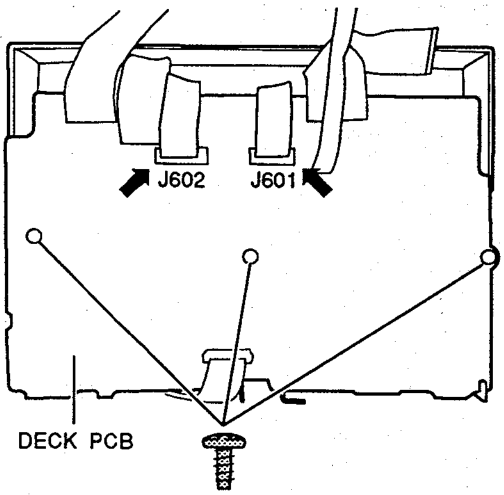


Fig. 1-5

2) Disconnect the flat cables from the J17 and J22 connectors by pulling the stoppers of the connectors up.
3) Disconnect the P1, P101, P601 and P602 connectors and remove the three screws on the DECK PCB, then remove the DECK PCB.

1-3-2. Removal of the MECHA. BLOCK

1) Unhook the door spring on the TAPE-I MECHA. BLOCK.

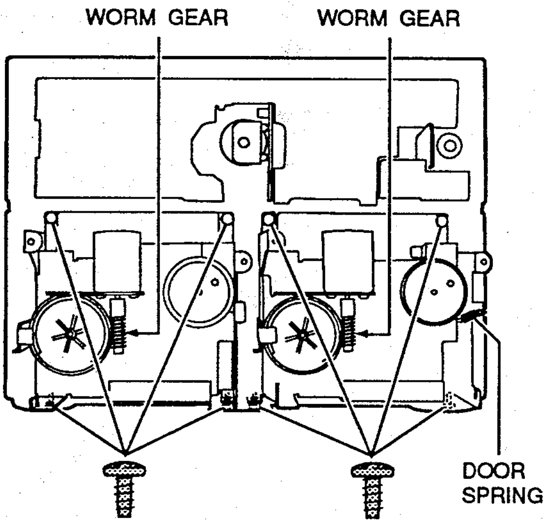


Fig. 1-6

2) Remove the four screws for each of the TAPE-I and TAPE-II MECHA. BLOCKs then remove the BLOCKs carefully. If the cassette holder is closed, turn the loading motor's WORM GEAR to open it and then remove the MECHA. BLOCK.

II. PRINCIPAL PARTS LOCATION

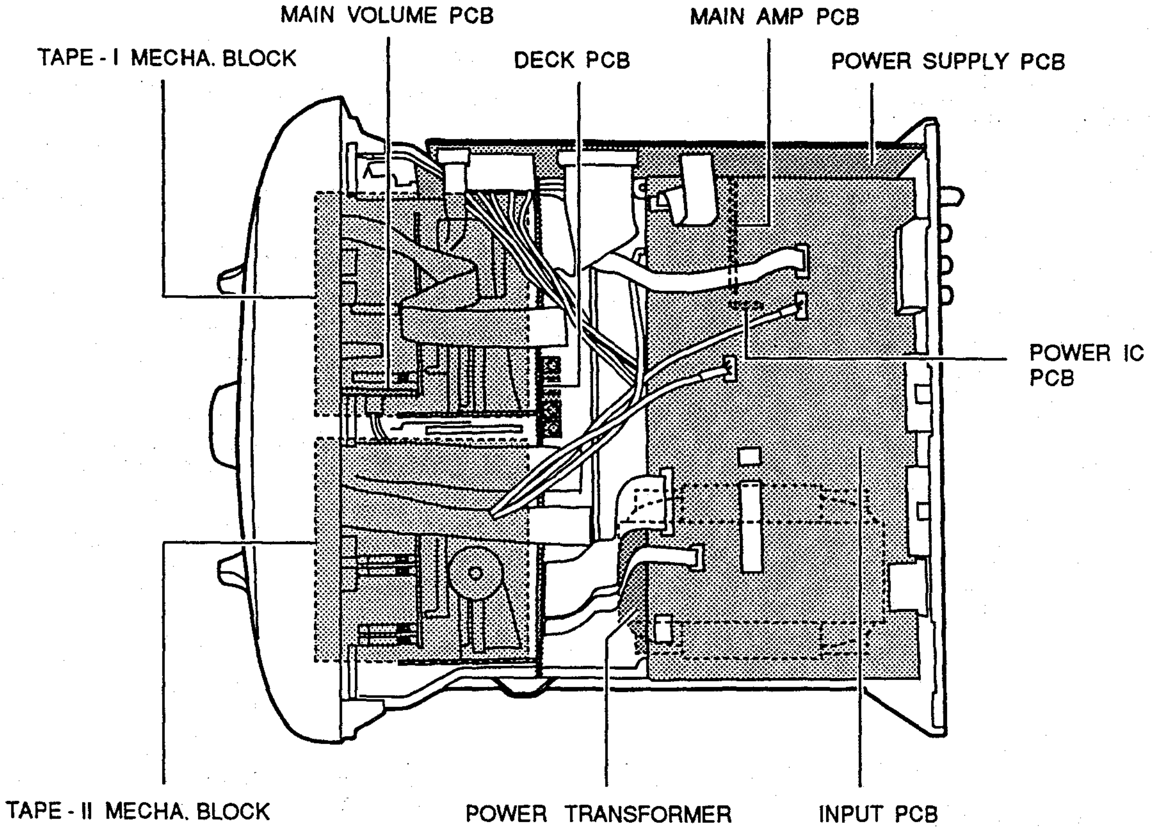

MAIN VOLUME PCB
MAIN AMP PCB
TAPE - I MECHA. BLOCK
DECK PCB
POWER SUPPLY PCB
POWER IC PCB
TAPE - II MECHA. BLOCK
POWER TRANSFORMER
INPUT PCB

Fig. 2-1 Top view

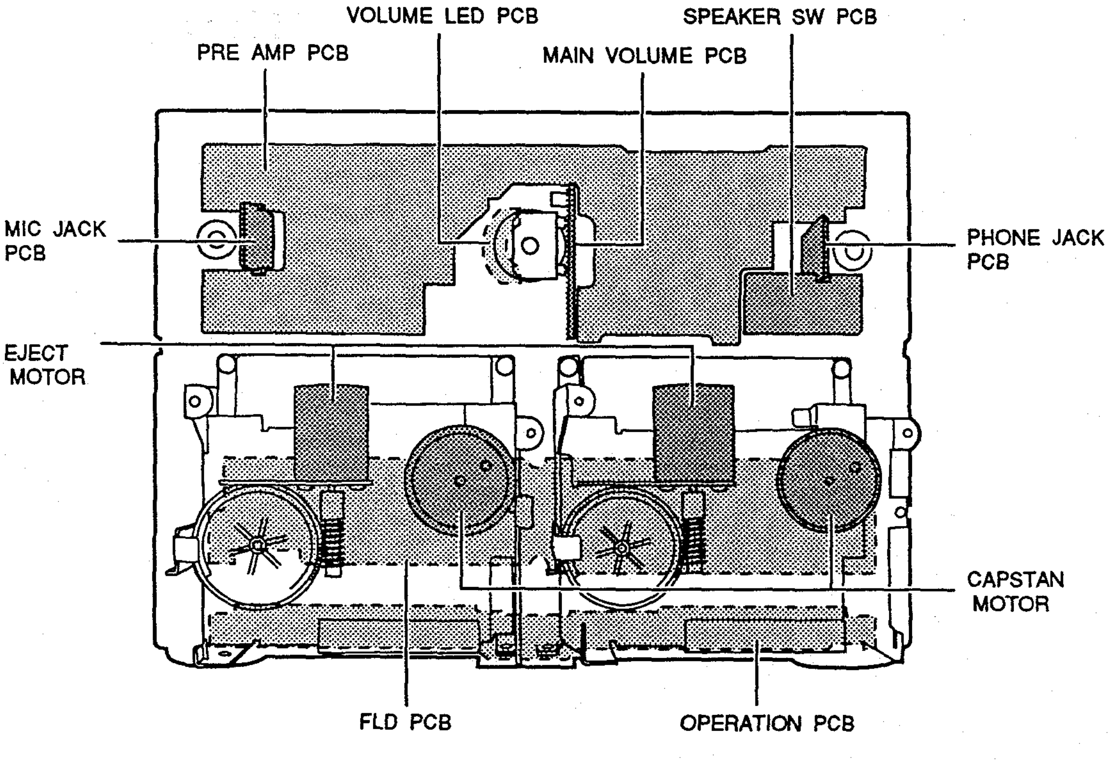

VOLUME LED PCB
SPEAKER SW PCB
PRE AMP PCB
MAIN VOLUME PCB
MIC JACK PCB
PHONE JACK PCB
EJECT MOTOR
CAPSTAN MOTOR
FLD PCB
OPERATION PCB

Fig. 2-2 Front panel

III. REPLACEMENT OF PRINCIPAL MECHANICAL PARTS

3-1. REPLACEMENT OF THE FR BELT and MAIN BELT

1) Remove the two Ⓐ screws then remove the HEAD SHIELD PLATE.

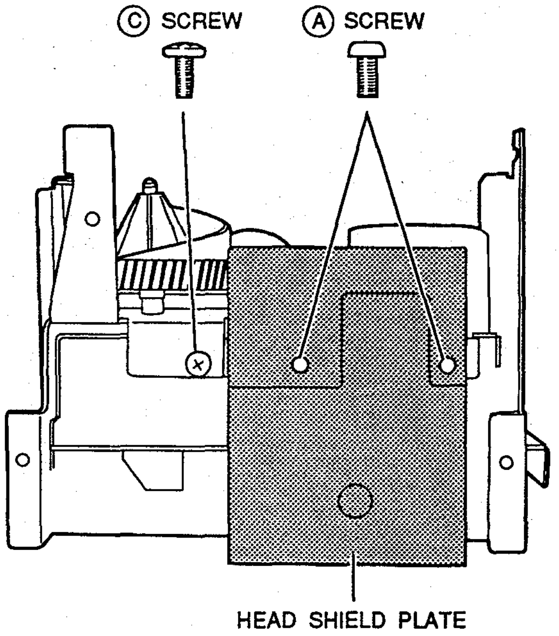

Ⓒ SCREW
Ⓐ SCREW
HEAD SHIELD PLATE

Fig. 3-1

2) Remove the Ⓑ graduated screw and remove the EJECT ARM and the EJECT TORSION SPRING. Next, remove the CASSETTE HOLDER.

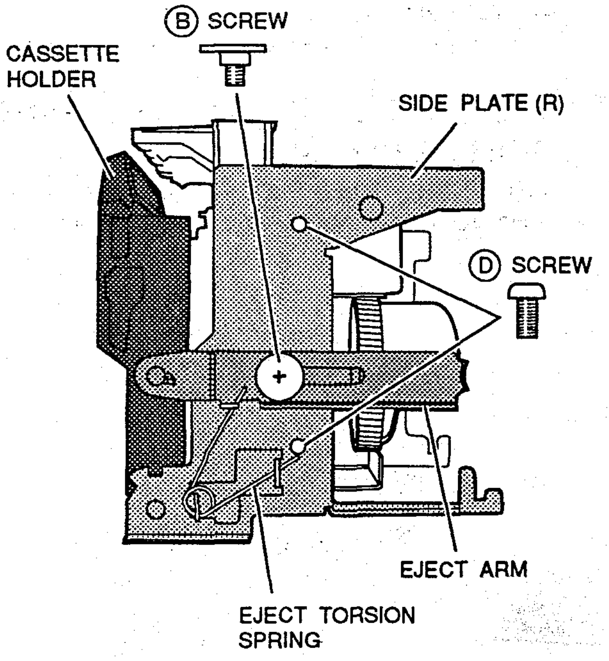

Ⓑ SCREW
CASSETTE HOLDER
SIDE PLATE (R)
Ⓓ SCREW
EJECT ARM
EJECT TORSION SPRING

Fig. 3-2

3) Remove the Ⓒ and Ⓓ screws and remove the SIDE PLATE (R) (refer to Fig.3-1 and 3-2).

4) Remove the two Ⓔ screws and then remove the SIDE PLATE (L).

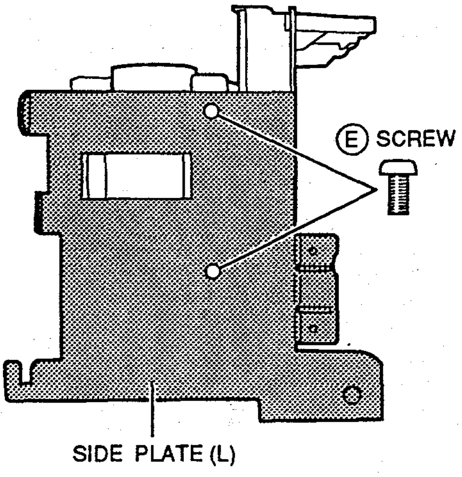

Ⓔ SCREW
SIDE PLATE (L)

Fig. 3-3

5) Remove the Ⓕ screw and three Ⓖ screws, then remove the FW BRACKET.

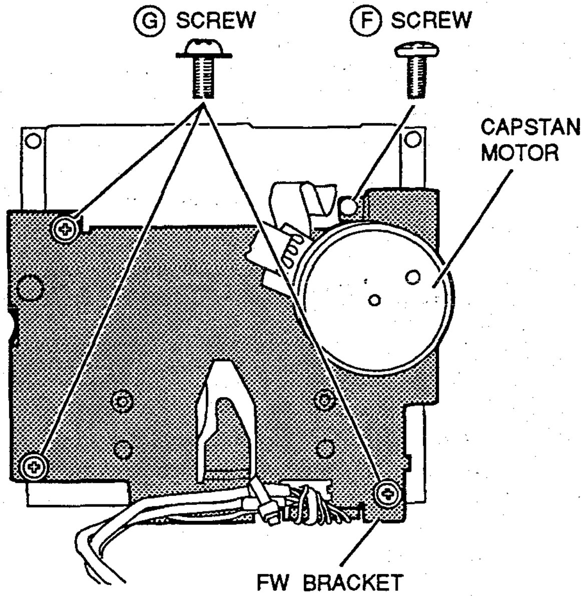

Ⓖ SCREW
Ⓕ SCREW
CAPSTAN MOTOR
FW BRACKET

Fig. 3-4

6) Change the FR BELT if necessary.

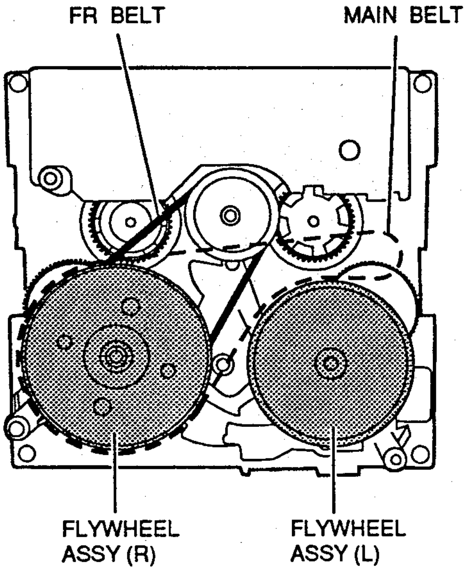


Fig. 3-5

7) Remove the old MAIN BELT and then place the new one on the FLYWHEEL ASS'Y (R).
8) Attach the FW BRACKET and tighten the four retaining screws, then thread the MAIN BELT using tweezers carefully.
9) Proceed in the reverse order of step 1) to 4) for installation. After replacement, tape speed adjustment must be performed.

3-2. REPLACEMENT OF THE CAPSTAN MOTOR

1) Unsolder the flat cable on the CAPSTAN MOTOR with a soldering iron.
2) Remove the FW BRACKET (refer to page 29).
3) Remove the two Ⓐ retaining screws and replace the CAPSTAN MOTOR.

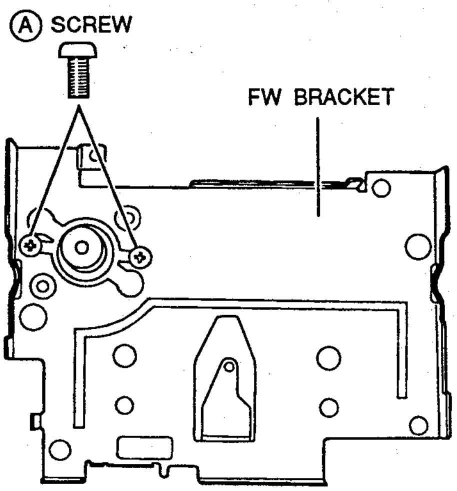


Fig. 3-6

4) Solder the flat cable onto the CAPSTAN MOTOR's terminal then proceed in the reverse order for installation (refer to section 3-1 step 8)). After replacement, tape speed adjustment must be performed.

3-3. REPLACEMENT OF THE EJECT MOTOR

1) Remove the Ⓑ graduated screw and remove the EJECT ARM and the EJECT TORSION SPRING (refer to Fig. 3-2).
2) Remove the slit washer and remove the EJECT CAM GEAR.

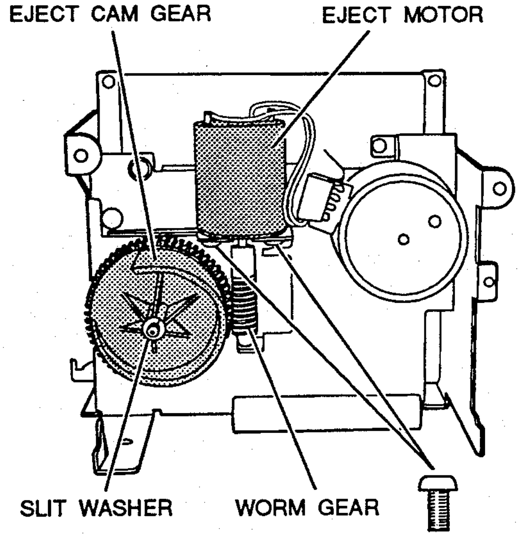


Fig. 3-7

3) Unsolder the two lead wires and remove the two retaining screws, then remove the EJECT MOTOR and extract the WORM GEAR.
4) Attach the WORM GEAR onto the new EJECT MOTOR's shaft and install it.
5) Attach the previously removed motor shield plate onto the new motor and then solder the lead wires.
6) Proceed in the reverse order of step 1) to 2) for installation.

3-4. REPLACEMENT OF THE PINCH ROLLER BLOCK

1) Pull the PINCH ROLLER BLOCK upward while releasing the pinch roller retaining hook in the direction of the arrow to remove it.

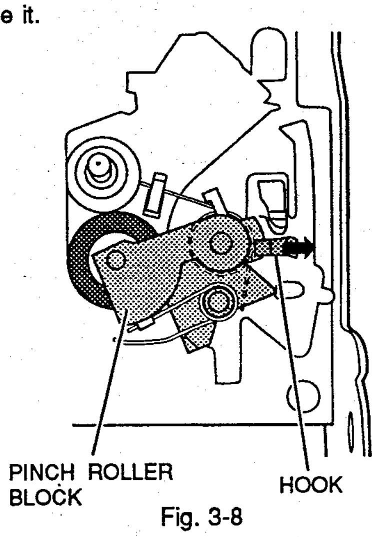
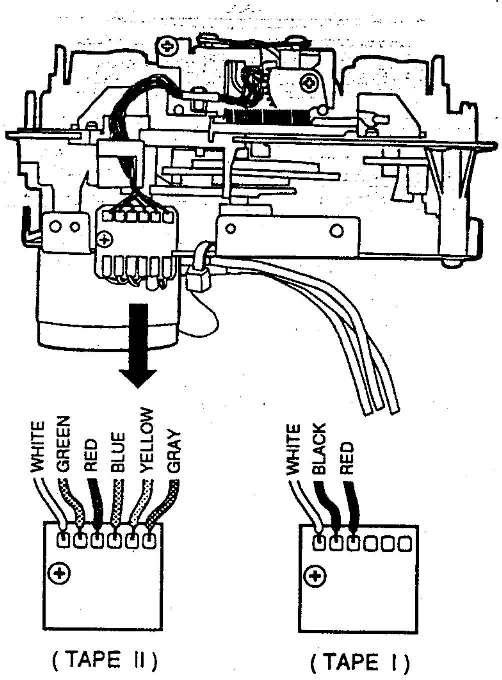


Fig. 3-8

2) Replace the PINCH ROLLER BLOCK and reassemble in the reverse order. Attach the two springs in the correct position when placing the PINCH ROLLER BLOCK.

3-5. REPLACEMENT OF THE PB HEAD OR REC/PB HEAD

1) Remove the two Ⓐ screws and remove the HEAD SHIELD PLATE as shown in Fig. 3-1.
2) Disconnect all the lead wires (from the head) on the JUNCTION PCB with a soldering iron.


WHITE
GREEN
RED
BLUE
YELLOW
GRAY
WHITE
BLACK
RED

(TAPE II) (TAPE I)

Fig. 3-9

3) Remove the two head retaining screws and remove the head.

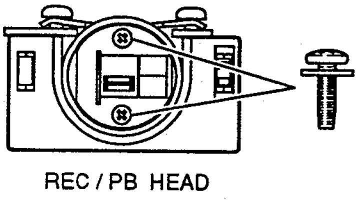


Fig. 3-10

4) Thread all the lead wires into the hole on the HEAD HOLDER and then tighten the two retaining screws.
5) Solder all the lead wires.
6) De-magnetize the HEAD then reassemble in the reverse order. After replacement, head azimuth and PB level adjustments are absolutely necessary for the proper performance. In addition, the REC bias current adjustment is also required for the TAPE-II HEAD (refer to sections 5-9).

Note:

If the removal of the HEAD HOLDER is necessary, align the first tooth of the HEAD HOLDER with the groove between the first and second tooth on the HEAD ARM GEAR when reassembling as shown in Fig. 3-11.

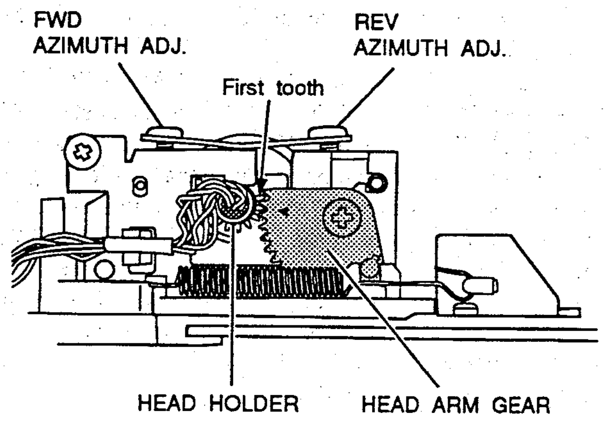

FWD
AZIMUTH ADJ.
REV
AZIMUTH ADJ.
First tooth
HEAD HOLDER
HEAD ARM GEAR

Fig. 3-11

IV. MECHANICAL ADJUSTMENT

4-1. ADJUSTMENT OF THE HEAD AZIMUTH ALIGNMENT

1) Connect an AC milli-voltmeters to the L-ch and R-ch of LINE OUT on the AX-890 and connect CH-1 and CH-2 inputs of an oscilloscope to the output of the AC milli-voltmeters.
2) Play back a 10 kHz (–15 dB), HEAD AZIMUTH ALIGNMENT TEST TAPE (TF-106CH) then adjust the PB HEAD AZIMUTH ALIGNMENT Ⓐ (FWD PLAY) and Ⓑ (REV PLAY) SCREWs respectively so that the reading on the AC milli-voltmeters are at maximum and waveforms on the oscilloscope are in the same phase, in both FWD and REV directions. Perform the adjustment on both the TAPE-I and TAPE-II heads if necessary. (Use a de-magnetized philips type screwdriver for adjustment.)
3) After adjustment, the AZIMUTH ADJ. screws must be paint-locked (refer to Fig. 3-11 on page 31).

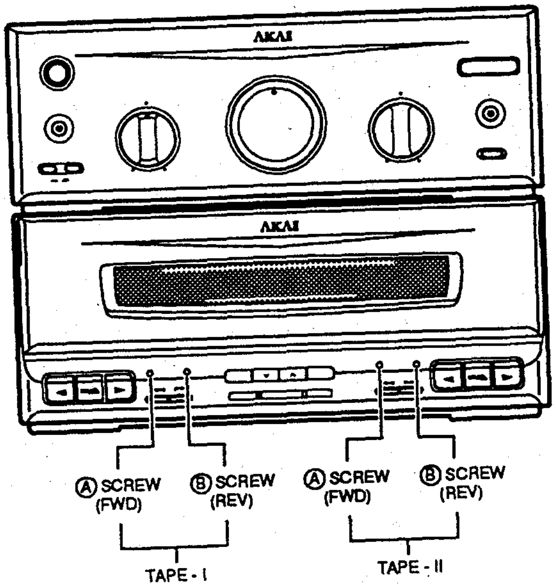


Fig. 4-1

V. ELECTRICAL ADJUSTMENT

NOTE:

1) The following adjustment should be performed in the "ADJUSTMENT TEST MODE". To engage the "ADJUSTMENT TEST MODE", connect the AC power cord to the AC outlet while pressing the TAPE-I "►" and "DUBBING START" buttons together.
   When the "ADJUSTMENT TEST MODE" is engaged, the X1 DUB indicator is lit.
2) When performing the tape speed adjustment, observe the following notes.
   - Adjustment should be started more than 30 seconds after the power is ON.
   - Adjustment should be made at X2 speed mode first then normal speed mode.
   - Adjustment should be made in the forward direction.
3) To disengage the adjustment test mode, unplug the AC power cord from the AC outlet.
4) Set the DOLBY NR switch to the "OFF" position during adjustment.
5) Use one of the following tapes during adjustment in step 9.
   Normal tape : Maxell UDI C-60
   CrO2 tape : TDK SA C-60
   Metal tape : TDK MA C-60
6) Before and after adjustment, clean and demagnetize the heads.

STEP | ADJUSTMENT

1. Test tape/input signal
2. Mode
3. Check point, adjustment part
4. Remarks (•) and result (∗)

——> Adjustment Part

- - -> Test Point

8 | DIP POINT

1. Normal type blank tape
2. TAPE-II REC
3. R413, T402 (L) & T452 (R)
4. • Connect a DC voltmeter to both of the R413's leads.
   ∗ Turn the core of the T402 and T452 alternately so that the meter registers a minimum reading.

7 | ERASE OSC FREQUENCY

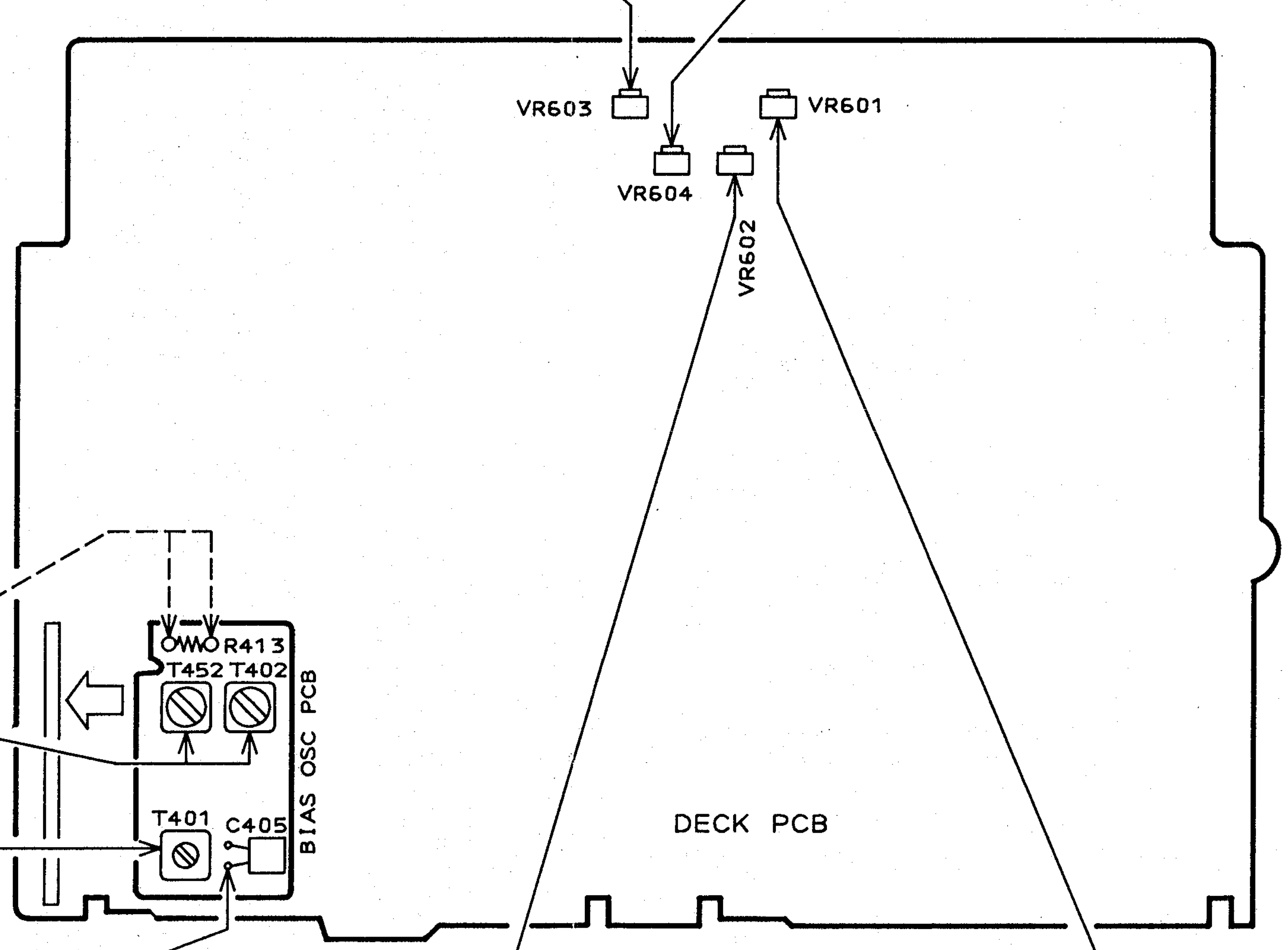
1. Normal type blank tape
2. TAPE-II REC
3. C405, T401
4. • Connect a frequency counter between C405's lead and GND. (10 : 1 probe should be used to avoid affecting to the measurement.)
   ∗ Turn the core of the T401 so that the frequency is 100.0 ± 0.2 kHz.

3 | TAPE-II (X2) TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR603
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button to engage the double tape speed.
   ∗ 6,300 ± 20 Hz

4 | TAPE-II NORMAL TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR604
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button again to resume normal tape speed.
   ∗ 3,150 ± 10 Hz



2 | TAPE-I NORMAL TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT,VR602
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button again to resume normal tape speed.
   ∗ 3,150 ± 10 Hz

1 | TAPE-I (X2) TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR601
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button to engage the double tape speed.
   ∗ 6,300 ± 20 Hz

5 | TAPE-I PB LEVEL

1. 315 Hz test tape (TF-101CL)
2. PLAY
3. Line out
4. • Connect an AC milli-voltmeter to LINE OUT.
   • Press the "AUDIO I-HQ" button during playback.
   ∗ Confirm that both the L and R output levels are −6.0 ± 3 dBs after the AUDIO I-HQ indicator in the FL display has disappeared.

6 | TAPE-II PB LEVEL

1. 315 Hz test tape (TF-101CL)
2. PLAY
3. Line out
4. • Connect an AC milli-voltmeter to LINE OUT.
   • Press the "AUDIO I-HQ" button during playback.
   ∗ Confirm that both the L and R output levels are −6.0 ± 3 dBs after the AUDIO I-HQ indicator in the FL display has disappeared.

9 | REC BIAS PRESET

1. Normal, CrO2 and Metal type blank tape
2. REC
3. –
4. • Load a normal type blank tape and start recording.
   ∗ Press the "AUDIO I-HQ" button and then eject the tape after the AUDIO I-HQ indicator in the FL display disappeared and the "REC PAUSE" mode has been engaged.
   ∗ Change the tape to the CrO2 and Metal types respectively and repeat the preset with the same manner as normal type tape.

VI. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list the Part No., Model No. and the description of earch part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

2. HEAD BASE BLOCK

Ref. No.	Part. No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20×03STL CMT
4	ZS-536488	BID20×08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in the figure.

b) PC Block

2. MAIN PC BOARD

Ref. No.	Part. No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A] : AAL (U.S.A)	[S] : SAA (Australia)
[B] : BEAB (England)	[U] : U/T (Universal Area)
[C] : CSA (Canada)	
[E] : CEE (Europe)	[V] : VDE (Germany)
[J] : JPN (Japan)	[Y] : Custom

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

⚠ (✱) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

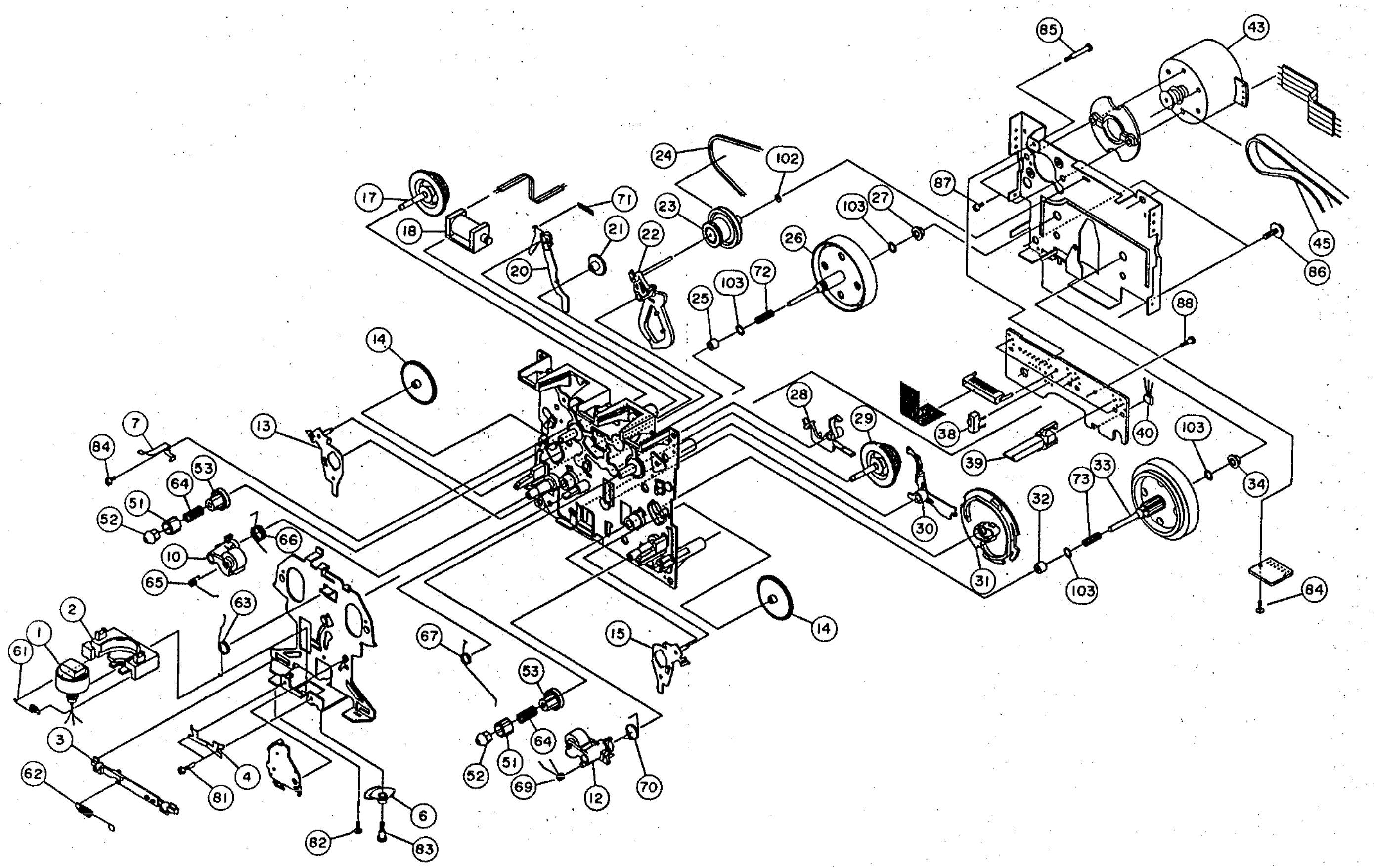
⚠ (✱) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCUTITÉDE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	AX-422294N	REMOCON RC-S890
2	BB-418666N	MECHA CRF-4108 [L MECHA]
3	BB-418669N	MECHA CRF-4127 [R MECHA]
4	BM-733691J	MOTOR ASSY
5	BM-374198	MOTOR RF-370CA-15370
6	✱ BT-422292N	TRANS POW C1038-E [E]
7	✱ BT-422290N	TRANS POW C1038-U [U,B,S]
8	✱ BT-422293N	TRANS POW C1038-V [V]
9	ED-418718J	D LED SEL3413E(C,D) GREEN
10	ED-418635J	D LED SEL6415E(C,D) GREEN
11	ED-307572	D SILICON H 1SS131
12	✱ ED-384278J	D SILICON RBV602 200/6.0A
13	✱ ED-511907	D SILICON 1N4002 100/1.0A
14	ED-388320J	D ZENER H HZS12B3L
15	ED-407083J	D ZENER H HZS12C1L
16	ED-418869N	D ZENER H HZS12C2L T26
17	ED-422073J	D ZENER H HZS30-3L T26
18	ED-390652J	D ZENER H HZS5A1
19	✱ ED-408733J	D ZENER H HZS6A3L
20	ED-378530J	D ZENER H HZS6B2L
21	✱ ED-387783J	D ZENER H HZS6C3L
22	ED-395862J	D ZENER H HZS7A1L
23	✱ ED-425401J	D ZENER H HZS7A2L
24	ED-390651J	D ZENER H HZS7B2L
25	ED-408830J	D ZENER H HZS7C1L T26
26	ED-387820J	D ZENER H HZS9A2L
27	✱ EF-393708M	FUSE 218 TIME 250V 1.60A [U,B,S]
28	✱ EF-394702M	FUSE 218 TIME 250V 2.00A
29	✱ EF-394703M	FUSE 218 TIME 250V 2.50A [E,V]
30	✱ EF-394704M	FUSE 218 TIME 250V 4.00A
31	✱ EF-393706M	FUSE 218 TIME 250V 500MA
32	✱ EF-403606M	FUSE 218 TIME 250V 800MA
33	✱ EI-353421	IC BA6229
34	EI-419333J	IC HA12169FB
35	EI-387938J	IC HD74LS05P
36	EI-733690J	IC LB9051A
37	EI-419341J	IC MN12510F
38	EI-425471J	IC M38184M8-135FP RX1DECK1
39	EI-393323J	IC M5218AL-771
40	EI-213390	IC NJM4558D
41	✱ EI-366695	IC STK4172-2 [U,E,B,S]
42	✱ EI-418728J	IC STK4182-2 [V]
43	EI-408393J	IC ST24C01B1
44	EI-332259	IC TC4052BP
45	EI-200573	IC TC4053BP
46	EI-373383	IC UPC1297CA
47	EI-396490J	OSC CE CST4.00MGW-TF01 T05
48	EI-418663J	OSC CE CST6.30MGW-TF01 T05
49	EM-419261M	IND FL BJ231GK
50	EP-733672J	SOLENOID
51	EQ-422089N	RELAY POW DH2S 2NO 12V
52	✱ ER-328278	R FUSE H ERD2FC 1/4W 10R0G
53	✱ ER-200746	R FUSE H ERD2FC 1/4W 1000G
54	✱ ER-318248	R FUSE H S10 ERD2FC 1/4W 47R0G
55	✱ ER-401039J	R FUSE V T05 ERD2FCV 1/4W 4R7J
56	ES-408755M	SW LEAF LSA-2127E
57	ES-419356N	SW PUSH PS-135M2-A22S 2-02N
58	✱ ES-418650J	SW SELECT ESE-37311
59	ES-396610J	SW TACT SOR-122HS T05
60	ES-414593J	SW TACT SOR-142HS T05
61	ES-733689J	SWITCH (LEAF)
62	ES-733688J	SWITCH (MODE)
63	ET-356336	TR DTA114ES
64	ET-373382	TR DTA143ZS
65	ET-354415	TR DTA144ES
66	ET-353897	TR DTC114ES
67	ET-354371	TR DTC124ES
68	ET-364060	TR DTC143ES
69	ET-354364	TR DTC143TS
70	ET-373391	TR DTC143ZS
71	ET-354414	TR DTC144ES
72	ET-394570J	TR 2SA1038 S T05
73	ET-353899	TR 2SA1317 S,T,U
74	ET-352726	TR 2SA1392 T,U
75	ET-305463	TR 2SA970 GR,BL
76	ET-388338J	TR 2SB1425 S,E
77	✱ ET-408841J	TR 2SB1565 E,F
78	ET-394571J	TR 2SC2389 S,E T05
79	ET-397160J	TR 2SC3330 R,S,T,U,V
80	ET-378524J	TR 2SC3383 S,T,U
81	ET-361736	TR 2SC3576
82	ET-400741J	TR 2SC3708 T T05
83	✱ ET-408842J	TR 2SD2394 E,F
84	ET-416697J	TR 2SD2396 J,K
85	EV-422303N	VR ROTA.*RK11K L=30A503
86	EV-419350N	VR ROTA.RK11K1130 SP W104
87	EV-422304N	VR SPL RK16812MG B104X2
88	EW-418812N	CORD FFC AD P1.25 L=68 18P
89	HP-733660J	HEAD HOLDER ASSY (PB) [CRF-4108]
90	HR-733659J	HEAD HOLDER ASSY (REC/PB) [CRF-4127]
91	HZ-733661J	FLAME HEAD
92	MB-733677J	BELT FR
93	MB-733692J	BELT MAIN
94	MP-733666J	PINCH ARM (L) ASSY
95	MP-733667J	PINCH ARM (R) ASSY

MACHANISM BLOCK



2. MACHANISM BLOCK

Ref. No.	Part No.	Description
1-A	HR-733659J	HEAD HOLDER ASSY (REC/PB) [CRF-4127]
1-B	HP-733660J	HEAD HOLDER ASSY (PB) [CRF-4108]
2	HZ-733661J	FLAME HEAD
3	ML-733662J	LEVER HEAD
4	ZG-733663J	SPRING AZIMUTH
6	MZ-733664J	GEAR HEAD ARM
7	ZG-733665J	SPRING CASSETTE
10	MP-733666J	PINCH ARM (L) ASSY
12	MP-733667J	PINCH ARM (R) ASSY
13	ML-733668J	ARM PLAY(L)
14	MZ-733669J	GEAR PLAY
15	ML-733670J	ARM PLAY(R)
17	MT-733671J	SUB REEL (L) ASSY
18	EP-733672J	SOLENOID
20	ML-733673J	ARM RVS
21	MZ-733674J	GEAR FF
22	ML-733675J	ARM FR ASSY
23	MR-733676J	PULLEY FR ASSY
24	MB-733677J	BELT FR
25	MV-733678J	METAL
26	MI-733679J	FLYWHEEL (L) ASSY
27	MV-733680J	METAL
28	ML-733681J	ARM BRAKE
29	MT-733682J	SUB REEL (R) ASSY
30	ML-733683J	ARM TRIGER
31	MZ-733684J	GEAR CAM
32	MV-733685J	METAL
33	MI-733686J	FLYWHEEL (R) ASSY
34	MV-733687J	METAL
38	ES-733688J	SWITCH (MODE)
39	ES-733689J	SWITCH (LEAF)
40	EI-733690J	IC LB9051A
43	BM-733691J	MOTOR ASSY
45	MB-733692J	BELT MAIN
51	MT-733693J	REEL A
52	MT-733694J	REEL B
53	MR-733695J	PULLEY REEL
61	ZG-733696J	SPRING
62	ZG-733697J	SPRING
63	ZG-733698J	SPRING
64	ZG-733699J	SPRING
65	ZG-733700J	SPRING
66	ZG-733701J	SPRING
67	ZG-733702J	SPRING
69	ZG-733703J	SPRING
70	ZG-733704J	SPRING
71	ZG-733705J	SPRING
72	ZG-733706J	SPRING
73	ZG-733707J	SPRING
81	ZS-733708J	SCREW (AZIMUTH)
82	ZS-733709J	SCREW 20X06
83	ZS-733710J	SCREW
84	ZS-733711J	SCREW 20X04
85	ZS-733712J	SCREW 20X16
86	ZS-733713J	SCREW 26X08
87	ZS-733714J	SCREW 26X07
88	ZS-733715J	SCREW 26X08
102	ZW-733716J	WASHER 16X040X040
103	ZW-733717J	WASHER 26X042X013

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

3. P.C. BOARD BLOCK

Ref. No.	Part No.	Description
1-A	BA-C1038T050A	ML PC(#)MAIN890 BLKAX-890(U)/ML [U,B,S]
1-B	BA-C1038T050B	ML PC(#)MAIN890 BLKAX-890(E)/ML [E]
1-C	BA-C1038T050C	ML PC(#)MAIN890 BLKAX-890(V)/ML [V]
2	BA-C1038T060A	ML PC(#)DECK890 BLKAX-890/ML

PC (#) MAIN BLK CONSISTS OF FOLLOWING P.C. BOARDS.

- INPUT P.C. BOARD
- POWER SUPPLY P.C. BOARD
- MAIN AMP P.C. BOARD
- POWER IC P.C. BOARD

PC (#) DECK BLK CONSISTS OF FOLLOWING P.C. BOARDS.

- DECK P.C. BOARD
- BIAS OSC P.C. BOARD
- FLD P.C. BOARD
- OPERATION P.C. BOARD
- PRE-AMP P.C. BOARD
- MAIN VOLUME P.C. BOARD
- PHONES JACK P.C. BOARD
- VOLUME LED P.C. BOARD
- SPEAKER SW P.C. BOARD
- MIC JACK P.C. BOARD

4. INPUT P.C. BOARD

Ref. No.	Part No.	Description
C91	✱EC-389414J	C CE V DE7090 B102K 400AC
D1	✱ED-408733J	D ZENER H HZS6A3L
D2	✱ED-511907	D SILICON 1N4002 100/1.0A
D3	✱ED-511907	D SILICON 1N4002 100/1.0A
D4	✱ED-511907	D SILICON 1N4002 100/1.0A
D5	✱ED-511907	D SILICON 1N4002 100/1.0A
FR1	✱ER-200746	R FUSE H ERD2FC 1/4W 1000G
FR2	✱ER-200746	R FUSE H ERD2FC 1/4W 1000G
IC101	EI-213390	IC NJM4558D
IC102	EI-213390	IC NJM4558D
IC103	EI-213390	IC NJM4558D
IC104	EI-200573	IC TC4053BP
IC105	EI-200573	IC TC4053BP
IC106	EI-332259	IC TC4052BP
IC107	EI-200573	IC TC4053BP
IC108	EI-200573	IC TC4053BP
J1	EJ-419346N	PIN J YKC21-3164 6P
J2	EJ-408717J	SOCKET CFG1115-0121 RED 15P
J6	EJ-419342J	SOCKET CFG1117-0101 BLACK 17P
J101	✱EJ-416590J1	SOCKET INLET CCT-2302-0371 2P
L91	✱EO-416686J	COIL LF LF-4D-102 102UH
R34-A	ER-382474J	R OMF H S10 FS 1/2W 1R2J [U,B,S]
R34-B	ER-418873N	R OMF V T05FS ERX12SE1/2W 3R3J [V]
F1-A	✱EF-393708M	FUSE 218 TIME 250V 1.60A [U,B,S]
F1-B	✱EF-394703M	FUSE 218 TIME 250V 2.50A [E,V]
F2	✱EF-393708M	FUSE 218 TIME 250V 1.60A [U,B,S]
F3	✱EF-403606M	FUSE 218 TIME 250V 800MA
F4	✱EF-403606M	FUSE 218 TIME 250V 800MA
F5	✱EF-393706M	FUSE 218 TIME 250V 500MA
F6	✱EF-393706M	FUSE 218 TIME 250V 500MA

5. POWER SUPPLY P.C. BOARD

Ref. No.	Part No.	Description
D201	* ED-384278J	D SILICON RBV602 200/6.0A
D202	* ED-511907	D SILICON 1N4002 100/1.0A
D203	* ED-511907	D SILICON 1N4002 100/1.0A
D204	* ED-511907	D SILICON 1N4002 100/1.0A
D205	* ED-511907	D SILICON 1N4002 100/1.0A
D206	* ED-511907	D SILICON 1N4002 100/1.0A
D207	* ED-511907	D SILICON 1N4002 100/1.0A
D208	* ED-511907	D SILICON 1N4002 100/1.0A
D209	* ED-511907	D SILICON 1N4002 100/1.0A
D210	* ED-511907	D SILICON 1N4002 100/1.0A
D211	ED-307572	D SILICON H 1SS131
D212	ED-307572	D SILICON H 1SS131
D213	ED-307572	D SILICON H 1SS131
D214	ED-307572	D SILICON H 1SS131
D215	ED-307572	D SILICON H 1SS131
D216	ED-307572	D SILICON H 1SS131
D217	ED-407083J	D ZENER H HZS12C1L
D218	ED-388320J	D ZENER H HZS12B3L
D219	ED-387820J	D ZENER H HZS9A2L
D220	ED-387820J	D ZENER H HZS9A2L
D221	ED-307572	D SILICON H 1SS131
D222	* ED-511907	D SILICON 1N4002 100/1.0A
D223	* ED-511907	D SILICON 1N4002 100/1.0A
D224	ED-422073J	D ZENER H HZS30-3L T26
D225	* ED-388320J	D ZENER H HZS12B3L
D226	* ED-387783J	D ZENER H HZS6C3L
D227	* ED-425401J	D ZENER H HZS7A2L
D228	ED-307572	D SILICON H 1SS131
D229	ED-307572	D SILICON H 1SS131
D230	ED-390651J	D ZENER H HZS7B2L
D231	ED-390651J	D ZENER H HZS7B2L
D232	ED-307572	D SILICON H 1SS131
D233	ED-307572	D SILICON H 1SS131
D234	ED-307572	D SILICON H 1SS131
D235	ED-307572	D SILICON H 1SS131
D236	ED-378530J	D ZENER H HZS6B2L
D237	ED-307572	D SILICON H 1SS131
D238	ED-390652J	D ZENER H HZS5A1
D239	ED-307572	D SILICON H 1SS131
L201	EO-403613J	COIL FIX 2 202AK-018A 2R2K
L202	EO-403613J	COIL FIX 2 202AK-018A 2R2K
R224	ER-418874N	R OMF V T05FS ERG12SE1/2W 330J
R245	ER-353877	R OMF H S15 FS 1W 1R0J
R246	ER-353877	R OMF H S15 FS 1W 1R0J
R253	ER-347610	R CT P F09 PLATE 3W R22K
R254	ER-347610	R CT P F09 PLATE 3W R22K
R265	* ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R266	* ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R269	ER-368284	R OMF H S12 FS 1W 271J
R270	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R271	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
RL201	EQ-422089N	RELAY POW DH2S 2NO 12V
TM201	EJ-408698J	TERMINAL PUSH LQR0810-0006 8P
TR201	* ET-408842J	TR 2SD2394 E,F
TR202	* ET-408841J	TR 2SB1565 E,F
TR203	ET-352726	TR 2SA1392 T,U
TR204	ET-378524J	TR 2SC3383 S,T,U
TR205	ET-354371	TR DTC124ES
TR206	ET-353899	TR 2SA1317 S,T,U
TR207	* ET-408842J	TR 2SD2394 E,F
TR208	* ET-408841J	TR 2SB1565 E,F
TR209	ET-397160J	TR 2SC3330 R,S,T,U,V
TR210	ET-353899	TR 2SA1317 S,T,U
TR211	ET-354371	TR DTC124ES
TR212	ET-354371	TR DTC124ES
TR213	ET-353899	TR 2SA1317 S,T,U
TR214	ET-397160J	TR 2SC3330 R,S,T,U,V
TR215	ET-397160J	TR 2SC3330 R,S,T,U,V
TR216	ET-397160J	TR 2SC3330 R,S,T,U,V
TR217	ET-397160J	TR 2SC3330 R,S,T,U,V
TR218	ET-397160J	TR 2SC3330 R,S,T,U,V
TR220	ET-353899	TR 2SA1317 S,T,U
TR221	* ET-408841J	TR 2SB1565 E,F
TR222	* ET-408842J	TR 2SD2394 E,F
TR223	* ET-408842J	TR 2SD2394 E,F
TR224	ET-397160J	TR 2SC3330 R,S,T,U,V
TR226	ET-354414	TR DTC144ES
TR227	ET-378524J	TR 2SC3383 S,T,U
TR228	* ET-408842J	TR 2SD2394 E,F
TR229	ET-305463	TR 2SA970 GR,BL
TR230	ET-305463	TR 2SA970 GR,BL
TR231	ET-353899	TR 2SA1317 S,T,U
F7	* EF-394704M	FUSE 218 TIME 250V 4.00A
F8	* EF-394704M	FUSE 218 TIME 250V 4.00A
F9	* EF-394702M	FUSE 218 TIME 250V 2.00A
F10	* EF-394702M	FUSE 218 TIME 250V 2.00A

6. MAIN AMP P.C. BOARD

Ref. No.	Part No.	Description
D301	* ED-511907	D SILICON 1N4002 100/1.0A
D302	* ED-511907	D SILICON 1N4002 100/1.0A
R309	ER-336771	R OMF H S15 FS 1W 560J
R315	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R359	ER-336771	R OMF H S15 FS 1W 560J
R360	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J

7. POWER IC P.C. BOARD

Ref. No.	Part No.	Description
IC401-A	* EI-366695	IC STK4172-2 [U,E,B,S]
IC401-B	* EI-418728J	IC STK4182-2 [V]

8. DECK P.C. BOARD

Ref. No.	Part No.	Description
D181	ED-307572	D SILICON H 1SS131
D182	ED-307572	D SILICON H 1SS131
D183	ED-307572	D SILICON H 1SS131
D201	ED-307572	D SILICON H 1SS131
D251	ED-307572	D SILICON H 1SS131
D481	ED-418869N	D ZENER H HZS12C2L T26
D502	ED-307572	D SILICON H 1SS131
D503	ED-307572	D SILICON H 1SS131
D504	ED-307572	D SILICON H 1SS131
D505	ED-307572	D SILICON H 1SS131
D601	ED-307572	D SILICON H 1SS131
D602	ED-307572	D SILICON H 1SS131
D603	ED-395862J	D ZENER H HZS7A1L
FL102	EO-356809	COIL TUN 1 100Z-121 100.00KHZ
FL152	EO-356809	COIL TUN 1 100Z-121 100.00KHZ
FR481	* ER-401039J	R FUSE V T05 ERD2FCV 1/4W 4R7J
FR482	* ER-401039J	R FUSE V T05 ERD2FCV 1/4W 4R7J
FR483	* ER-318248	R FUSE H S10 ERD2FC 1/4W 47R0G
IB501	EH-422069J	COMP R RGLE9X 472J
IC1	EI-393323J	IC M5218AL-771
IC101	EI-393323J	IC M5218AL-771
IC201	EI-419333J	IC HA12169FB
IC401	EI-373383	IC UPC1297CA
IC501	EI-425471J	IC M38184M8-135FP RX1DECK1
IC502	EI-387938J	IC HD74LS05P
IC503	EI-408393J	IC ST24C01B1
IC601	* EI-353421	IC BA6229
IC602	* EI-353421	IC BA6229
L401	EO-403270J	COIL FIX 1 EL0405RA T05 101J
TR1	ET-364060	TR DTC143ES
TR2	ET-354364	TR DTC143TS
TR51	ET-364060	TR DTC143ES
TR52	ET-354364	TR DTC143TS
TR101	ET-394571J	TR 2SC2389 S,E T05
TR102	ET-394571J	TR 2SC2389 S,E T05
TR103	ET-397160J	TR 2SC3330 R,S,T,U,V
TR104	ET-354364	TR DTC143TS
TR105	ET-397160J	TR 2SC3330 R,S,T,U,V
TR151	ET-394571J	TR 2SC2389 S,E T05
TR152	ET-394571J	TR 2SC2389 S,E T05
TR153	ET-397160J	TR 2SC3330 R,S,T,U,V
TR154	ET-354364	TR DTC143TS
TR155	ET-397160J	TR 2SC3330 R,S,T,U,V
TR181	ET-354414	TR DTC144ES
TR182	ET-354414	TR DTC144ES
TR183	ET-394570J	TR 2SA1038 S T05
TR184	ET-394570J	TR 2SA1038 S T05
TR301	ET-397160J	TR 2SC3330 R,S,T,U,V
TR302	ET-397160J	TR 2SC3330 R,S,T,U,V
TR351	ET-397160J	TR 2SC3330 R,S,T,U,V
TR352	ET-397160J	TR 2SC3330 R,S,T,U,V
TR381	ET-373382	TR DTA143ZS
TR382	ET-354414	TR DTC144ES
TR383	ET-373382	TR DTA143ZS
TR401	ET-354414	TR DTC144ES
TR402	ET-361736	TR 2SC3576
TR403	ET-416697J	TR 2SD2396 J,K
TR404	ET-354414	TR DTC144ES
TR405	ET-354414	TR DTC144ES
TR407	ET-400741J	TR 2SC3708 T T05
TR408	ET-400741J	TR 2SC3708 T T05
TR481	ET-416697J	TR 2SD2396 J,K
TR501	ET-354414	TR DTC144ES
TR503	ET-354415	TR DTA144ES
TR504	ET-361736	TR 2SC3576
TR505	ET-361736	TR 2SC3576
TR506	ET-354415	TR DTA144ES
TR508	ET-354414	TR DTC144ES
TR601	ET-388338J	TR 2SB1425 S,E
TR602	ET-388338J	TR 2SB1425 S,E
TR603	ET-388338J	TR 2SB1425 S,E
TR604	ET-356336	TR DTA114ES
TR605	ET-373391	TR DTC143ZS
TR606	ET-373391	TR DTC143ZS
TR607	ET-373391	TR DTC143ZS
TR608	ET-397160J	TR 2SC3330 R,S,T,U,V
TR609	ET-397160J	TR 2SC3330 R,S,T,U,V
TR610	ET-354414	TR DTC144ES
TR611	ET-354414	TR DTC144ES
TR612	ET-353899	TR 2SA1317 S,T,U
TR613	ET-353899	TR 2SA1317 S,T,U
TR614	ET-373391	TR DTC143ZS
TR615	ET-373391	TR DTC143ZS
TR616	ET-388338J	TR 2SB1425 S,E
TR617	ET-388338J	TR 2SB1425 S,E
VR601	EV-408710J	R S-FIX V T05EVNDCAA03 0.1W472
VR602	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR603	EV-408710J	R S-FIX V T05EVNDCAA03 0.1W472
VR604	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
X501	EI-418663J	OSC CE CST6.30MGW-TF01 T05

9. BIAS OSC P.C. BOARD

Ref. No.	Part No.	Description
T401	EO-408762J	COIL OSC 1 T2135-1 100.0KHZ
T402	EO-408763J	COIL OSC 1 T2135-2(HX)100.0KHZ
T452	EO-408763J	COIL OSC 1 T2135-2(HX)100.0KHZ

10. FLD P.C. BOARD

Ref. No.	Part No.	Description
D701	ED-307572	D SILICON H 1SS131
D702	ED-307572	D SILICON H 1SS131
D703	ED-307572	D SILICON H 1SS131
D704	ED-307572	D SILICON H 1SS131
IB701	EH-385846J	COMP R RGLE8X 473J
IB702	EH-378540J	COMP R RGLE5X 103J
IC701	EI-419341J	IC MN12510F
IN701	EM-419261M	IND FL BJ231GK
J702	EJ-422061J	SOCKET 00 6216 018 100 18P
X701	EI-396490J	OSC CE CST4.00MGW-TF01 T05

11. OPERATION P.C. BOARD

Ref. No.	Part No.	Description
J701	EJ-422061J	SOCKET 00 6216 018 100 18P
TS701	ES-396610J	SW TACT SOR-122HS T05
TS702	ES-414593J	SW TACT SOR-142HS T05
TS703	ES-396610J	SW TACT SOR-122HS T05
TS704	ES-414593J	SW TACT SOR-142HS T05
TS705	ES-396610J	SW TACT SOR-122HS T05
TS706	ES-414593J	SW TACT SOR-142HS T05
TS707	ES-414593J	SW TACT SOR-142HS T05
TS708	ES-414593J	SW TACT SOR-142HS T05
TS709	ES-414593J	SW TACT SOR-142HS T05
TS710	ES-414593J	SW TACT SOR-142HS T05
TS711	ES-396610J	SW TACT SOR-122HS T05
TS712	ES-414593J	SW TACT SOR-142HS T05
TS713	ES-396610J	SW TACT SOR-122HS T05
TS714	ES-414593J	SW TACT SOR-142HS T05
TS715	ES-396610J	SW TACT SOR-122HS T05
TS716	ES-414593J	SW TACT SOR-142HS T05
TS717	ES-414593J	SW TACT SOR-142HS T05

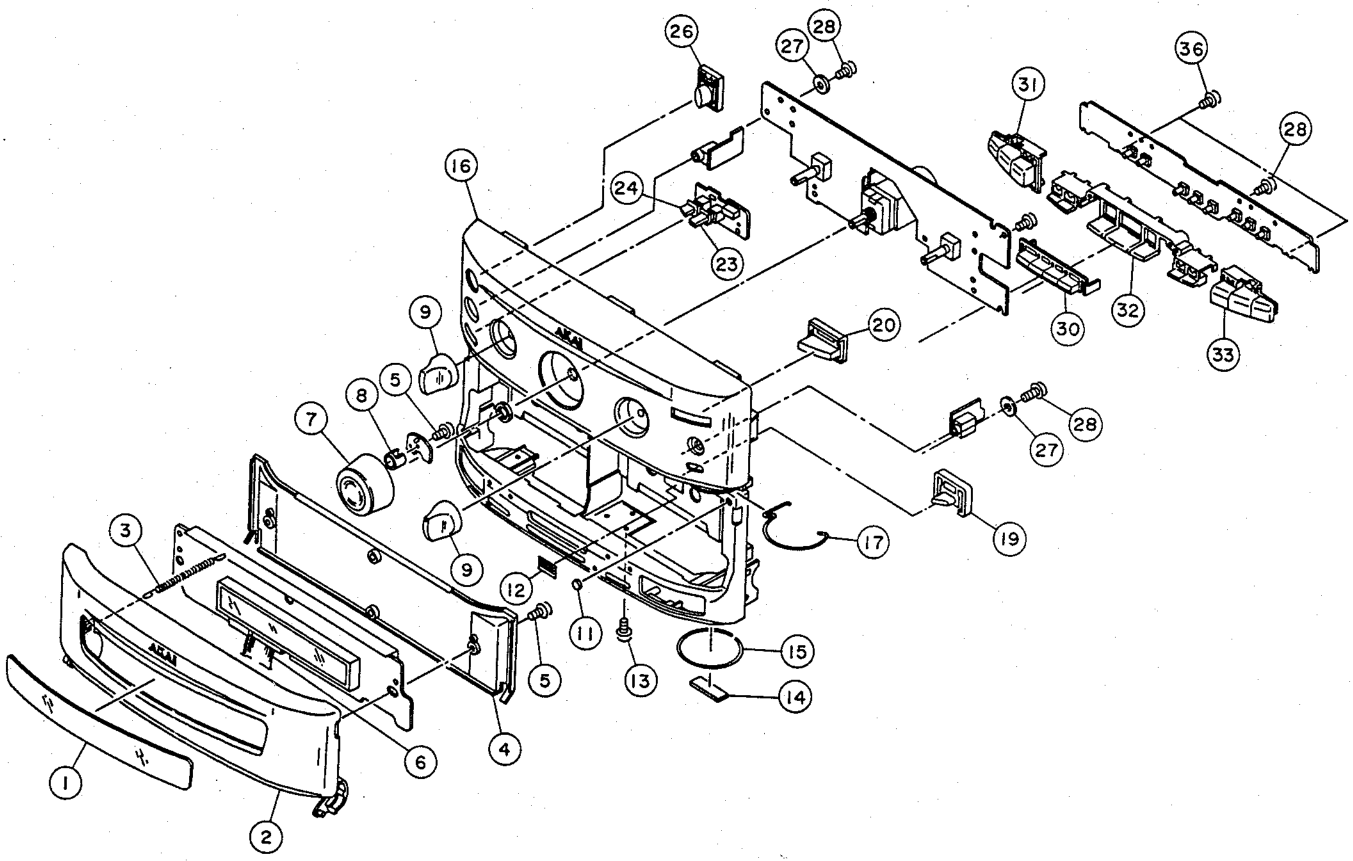
12. PRE-AMP P.C. BOARD

Ref. No.	Part No.	Description
D802	ED-418718J	D LED SEL3413E(C,D) GREEN
D803	ED-307572	D SILICON H 1SS131
D804	ED-307572	D SILICON H 1SS131
IC801	EI-213390	IC NJM4558D
IC803	EI-213390	IC NJM4558D
TR801	ET-397160J	TR 2SC3330 R,S,T,U,V
TR802	ET-397160J	TR 2SC3330 R,S,T,U,V
TR803	ET-353897	TR DTC114ES
TR804	ET-356336	TR DTA114ES
TR805	ET-373391	TR DTC143ZS
TR806	ET-397160J	TR 2SC3330 R,S,T,U,V
TR807	ET-354414	TR DTC144ES
TR808	ET-397160J	TR 2SC3330 R,S,T,U,V
TR809	ET-353899	TR 2SA1317 S,T,U
TS801	ES-396610J	SW TACT SOR-122HS T05
TS802	ES-396610J	SW TACT SOR-122HS T05
TS803	ES-396610J	SW TACT SOR-122HS T05
VR801	EV-419350N	VR ROTA.RK11K1130 SP W104
VR803	EV-422303N	VR ROTA.*RK11K L=30 A503

13. MAIN VOLUME P.C. BOARD

Ref. No.	Part No.	Description
D805	ED-408830J	D ZENER H HZS7C1L T26
FR801	* ER-328278	R FUSE H ERD2FC 1/4W 10R0G
IC802	EI-353421	IC BA6229
VR802	EV-422304N	VR SPL RK16812MG B104X2

FRONT PANEL BLOCK



14. PHONES JACK P.C. BOARD

Ref. No.	Part No.	Description
J20	EJ-419347N	PHONE J 3P LGY6502-0600 3.5
R803	ER-397194J	R OMF V T05FS ERG1SE 1W 331J
R853	ER-397194J	R OMF V T05FS ERG1SE 1W 331J

15. VOLUME LED P.C. BOARD

Ref. No.	Part No.	Description
D801	ED-418635J	D LED SEL6415E(C,D) GREEN

16. SPEAKER SW P.C. BOARD

Ref. No.	Part No.	Description
SW801	ES-419356N	SW PUSH PS-135M2-A22S 2-02N
SW802	ES-419356N	SW PUSH PS-135M2-A22S 2-02N

17. MIC JACK P.C. BOARD

Ref. No.	Part No.	Description
J21	EJ-419349N	PHONE J 2P YKB21-5113A 3.5

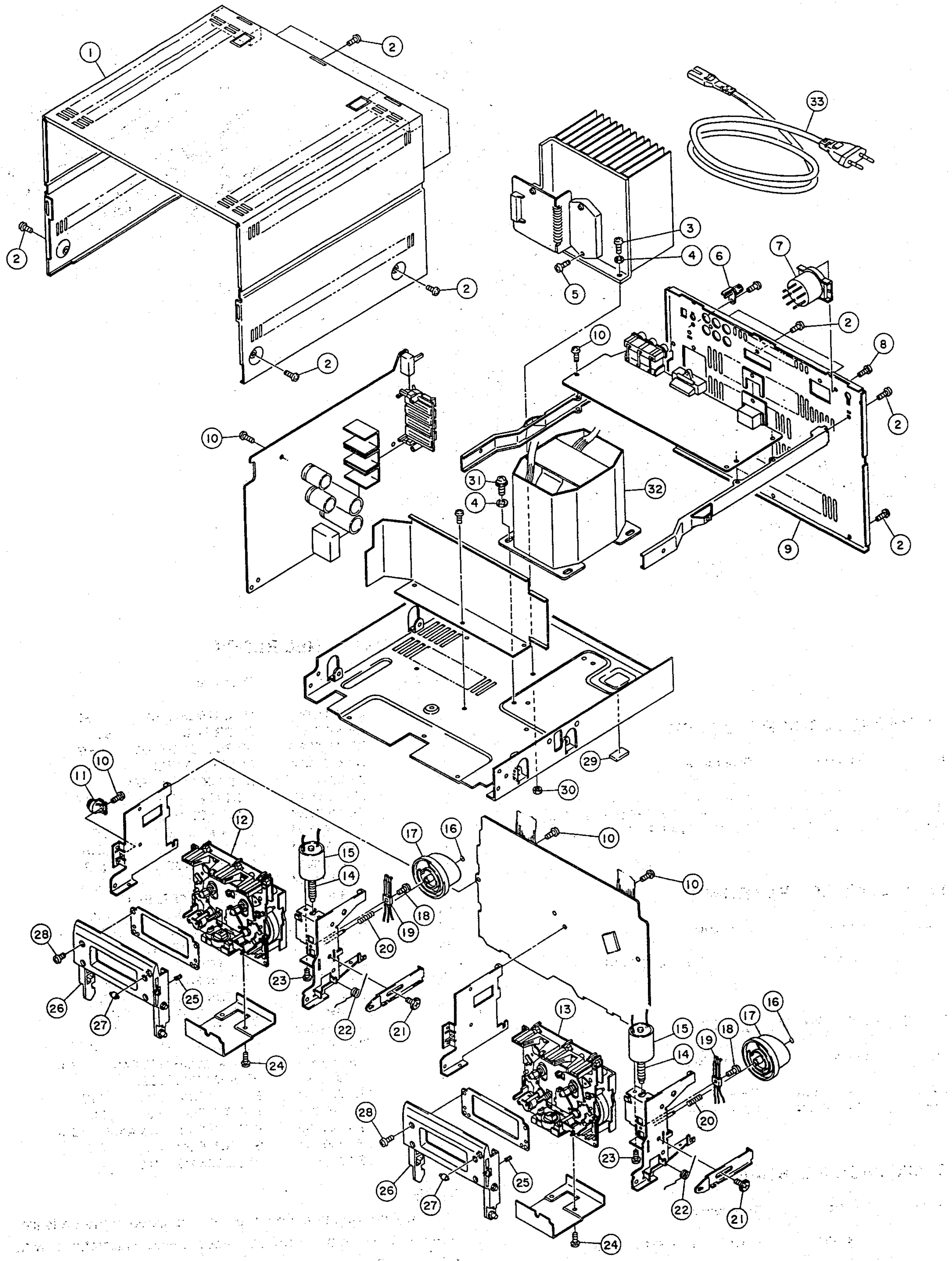
18. FRONT PANEL BLOCK

Ref. No.	Part No.	Description	
1	SE-419932M	WINDOW DOOR(2)	(SG)
2	SP-419928M	DOOR AX-890	(SG)
3	ZG-419992M	SP PULL DOOR 690	(SG)
4	SP-419930M	COVER DOOR(B)	(SG)
5	ZS-394414J	BT BID30X08STL BZN	
6	EW-418812N	CORD FFC AD P1.25 L=68 18P	
7	SK-419880M	KNOB VOLUME	(SG)
8	SE-419884M	LENS VOLUME	(SG)
9	SK-419881M	KNOB BALANCE	(SG)
11	SZ-419902M	CUSHION DOOR	(SG)
12	SE-394092M	REFLECTOR	(SG)
13	ZS-404181J	BT BID30X06STL BZN	
14	SA-394136M	CUSHION FOOT	(SG)
15	SZ-419923M	RING FOOT(1)	(SG)
16	SP-420648M	PANEL FRONT 890	(SG)
17	SZ-419924M	RING FOOT(2)	(SG)
19	SB-419879M	BUTTON BASS	(SG)
20	SB-419877M	BUTTON INPUT	(SG)
23	SB-419914M	BUTTON SP(R)	(SG)
24	SB-419913M	BUTTON SP(L)	(SG)
26	SB-419876M	BUTTON POWER	(SG)
27	ZW-418658N	PW30X120X080STL CMT	(SG)
28	ZS-393515J	BT BID30X10STL BZN	
30	SB-420674M	BUTTON TUNING(A)	(SG)
31	SB-419920M	BUTTON PLAY(L)-B	(SG)
32	SB-419917M	BUTTON FUNCTION-AX(2)	(SG)
33	SB-419921M	BUTTON PLAY(R)-B	(SG)
36	ZS-331181	BT BID30X08STL NI3	

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

FINAL ASSEMBLY BLOCK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19. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
1	SP-420650M	COVER UPPER AX(2) (SG)
2	ZS-394412J	BT BID30X08STL BZN PROJECTION
3	ZS-435273	BID40X10STL CMT
4	ZW-410640J	SW40STL CMT
5	ZS-395789J	BT BID30X16STL BZN
6	EJ-329610	TERMINAL W/SCREW UB-0067 L 1P
7	* ES-418650J	SW SELECT ESE-37311
8	ZS-393644J	{ST BID30X08STL BZN PROJECT}
9-A	SP-419896M	PANEL REAR AX-890(U) (SG)
9-B	SP-419897M	PANEL REAR AX-890(E,V) (SG)
9-C	SP-419898M	PANEL REAR -890(B,S,Y7) (SG)
10	ZS-394414J	BT BID30X08STL BZN
11	MZ-418867J	DAMPER 3F96-A-E
12	BB-418666N	MECHA CRF-4108 [L MECHA]
13	BB-418669N	MECHA CRF-4127 [R MECHA]
14	MZ-419867M	WORM (SG)
15	BM-374198	MOTOR RF-370CA-15370
16	ZW-377824	SLIT W26X050X025LMN
17	MZ-419866M	CAM GEAR EJECT (SG)
18	ZS-383755J	ST BID20X06STL CMT
19	ES-408755M	SW LEAF LSA-2127E
20	ZG-425111N	SP PUSH CAM GEAR (SG)
21	ZS-419870M	SCREW GRADUATED (SG)
22	ZG-419868M	SP TORSION EJECT (SG)
23	ZS-432674	PAN30X03STL CMT
24	ZS-418754N	ST PAN20X03STL CMT (SG)
25	ZG-419869M	SP PUSH CASSETTE (SG)
26	MZ-419865M1	HOLDER CASSETTE (SG)
27	MR-407755M	ROLLER (SG)
28	ZS-370834	BID26X05STL BZN
29	SA-407840M	CUSHION FOOT REAR (SG)
30	ZW-311744	N40STL CMT 3
31	ZS-346742	ST PAN40X08STL CMT CUP
32-A	* BT-422290N	TRANS POW C1038-U [U,B,S]
32-B	* BT-422292N	TRANS POW C1038-E [E]
32-C	* BT-422293N	TRANS POW C1038-V [V]
33-A	* EW-419258M	AC CORD 200S SZ-4W H03 VVH2-F U [U]
33-B	* EW-419249M	AC CORD 200S SE-1 SE-4 B E [E,V]
33-C	* EW-419248M	AC CORD 200S SE-5 SE-6 B B [B]
33-D	* EW-419250M	AC CORD 200 S SA-5SA-6 S [S]

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

20. ACCESSARY

Ref. No.	Part No.	Description
1	AX-422294N	REMOCON RC-S890

INDEX

Part No.	Ref. No.
AX422294N	20-1
BAC1038T050A	3-1-A
BAC1038T050B	3-1-B
BAC1038T050C	3-1-C
BAC1038T060A	3-2
BB418666N	19-12
BB418669N	19-13
BM374198	19-15
BM733691J	2-43
BT422290N	19-32-A
BT422292N	19-32-B
BT422293N	19-32-C
EC389414J	4-C91
ED307572	5-D211
ED307572	5-D212
ED307572	5-D213
ED307572	5-D214
ED307572	5-D215
ED307572	5-D216
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ED307572	10-D702
ED307572	10-D703
ED307572	10-D704
ED307572	12-D803
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ED378530J	5-D236
ED384278J	5-D201
ED387783J	5-D226
ED387820J	5-D219
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ED388320J	5-D218
ED388320J	5-D225
ED390651J	5-D230
ED390651J	5-D231
ED390652J	5-D238
ED395862J	8-D603
ED407083J	5-D217
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ED408830J	13-D805
ED418635J	15-D801
ED418718J	12-D802
ED418869N	8-D481
ED422073J	5-D224
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ED511907	6-D302
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EF393706M	4-F6
EF393708M	4-F1-A
EF393708M	4-F2
EF394702M	5-F9
EF394702M	5-F10
EF394703M	4-F1-B
EF394704M	5-F7
EF394704M	5-F8
EF403606M	4-F3
EF403606M	4-F4
EH378540J	10-IB702
EH385846J	10-IB701
EH422069J	8-IB501
EI200573	4-IC104
EI200573	4-IC105
EI200573	4-IC107
EI200573	4-IC108
EI213390	4-IC101
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EI213390	4-IC103
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EI353421	13-IC802
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EI419341J	10-IC701
EI425471J	8-IC501
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EJ408717J	4-J2
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EJ419342J	4-J6
EJ419346N	4-J1
EJ419347N	14-J20
EJ419349N	17-J21
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EJ422061J	11-J701
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EO356809	8-FL152
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EO403613J	5-L201
EO403613J	5-L202
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EO408763J	9-T402
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ES396610J	11-TS705
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ES414593J	11-TS712
ES414593J	11-TS714
ES414593J	11-TS716
ES414593J	11-TS717
ES418650J	19-7
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ES419356N	16-SW802
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ES733689J	2-39
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ET305463	5-TR230
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ET353899	5-TR213
ET353899	5-TR220
ET353899	5-TR231
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ET354414	8-TR382
ET354414	8-TR401
ET354414	8-TR404
ET354414	8-TR405
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ET354414	8-TR611
ET354414	12-TR807
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ET373391	8-TR614
ET373391	8-TR615
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ET394571J	8-TR152
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ET397160J	5-TR215
ET397160J	5-TR216
ET397160J	5-TR217
ET397160J	5-TR218
ET397160J	5-TR224
ET397160J	8-TR103
ET397160J	8-TR105
ET397160J	8-TR153
ET397160J	8-TR155
ET397160J	8-TR301
ET397160J	8-TR302
ET397160J	8-TR351
ET397160J	8-TR352
ET397160J	8-TR608
ET397160J	8-TR609
ET397160J	12-TR801
ET397160J	12-TR802
ET397160J	12-TR806
ET397160J	12-TR808
ET400741J	8-TR407
ET400741J	8-TR408
ET408841J	5-TR202
ET408841J	5-TR208
ET408841J	5-TR221

Part No.	Ref. No.
ET408842J	5-TR201
ET408842J	5-TR207
ET408842J	5-TR222
ET408842J	5-TR223
ET408842J	5-TR228
ET416697J	8-TR403
ET416697J	8-TR481
EV408710J	8-VR601
EV408710J	8-VR603
EV408779J	8-VR602
EV408779J	8-VR604
EV419350N	12-VR801
EV422303N	12-VR803
EV422304N	13-VR802
EW418812N	18-6
EW419248M	19-33-C
EW419249M	19-33-B
EW419250M	19-33-D
EW419258M	19-33-A
HP733660J	2-1-B
HR733659J	2-1-A
HZ733661J	2-2
MB733677J	2-24
MB733692J	2-45
MI733679J	2-26
MI733686J	2-33
ML733662J	2-3
ML733668J	2-13
ML733670J	2-15
ML733673J	2-20
ML733675J	2-22
ML733681J	2-28
ML733683J	2-30
MP733666J	2-10
MP733667J	2-12
MR407755M	19-27
MR733676J	2-23
MR733695J	2-53
MT733671J	2-17
MT733682J	2-29
MT733693J	2-51
MT733694J	2-52
MV733678J	2-25
MV733680J	2-27
MV733685J	2-32
MV733687J	2-34
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MZ733669J	2-14
MZ733674J	2-21
MZ733684J	2-31
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SB419877M	18-20
SB419879M	18-19
SB419913M	18-24
SB419914M	18-23
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SB419920M	18-31
SB419921M	18-33
SB420674M	18-30
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SE419884M	18-8
SE419932M	18-1
SK419880M	18-7
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SP419930M	18-4
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SZ419924M	18-17
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ZG419992M	18-3
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ZG733698J	2-63
ZG733699J	2-64
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ZG733702J	2-67
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ZG733704J	2-70
ZG733705J	2-71
ZG733706J	2-72
ZG733707J	2-73
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ZS346742	19-31
ZS370834	19-28
ZS383755J	19-18
ZS393515J	18-28
ZS393644J	19-8
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ZS733710J	2-83
ZS733711J	2-84
ZS733712J	2-85
ZS733713J	2-86
ZS733714J	2-87
ZS733715J	2-88
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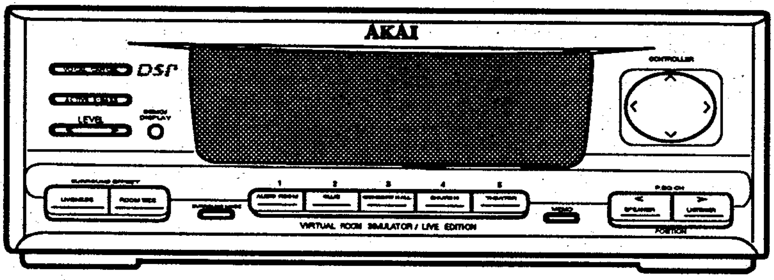
ZW410640J	19-4
ZW418658N	18-27
ZW733716J	2-102
ZW733717J	2-103

ABBREVIATIONS (AMPLIFIER)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A	Analog	MC	Moving Coil
AC	Alternating Current	MM	Moving Magnet
AMP	AMPlifier	PCB	Printed Circuit Board
CD	Compact Disc	R	Right
COM	COMmon	REG	REGulator
D	Digital	REC	RECord
D/A	Digital to Analog	TR	TRansistor
DAC	Digital to Analog Converter	SW	SWitch
DAT	Digital Audio Tape recorder	V.AMP	Voltage AMPlifier
DC	Direct Current	V.DISC	Video DISC
GND	GrouND	VR	Variable Resistance
L	Left	VTR	Video Tape Recorder
LED	Light Emitting Diode		

ABBREVIATIONS (CASSETTE)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
AC	Alternating Current	MIN	MINute
A/D	Analog/Digital	MML	Maximum Modulation Level
AF	Auto Fader	MOL	Maximum Output Level
AMP	AMPlifier	MPX	Multi PleX
AR	Anti Recording	NC	Not Connected (No Connection)
AT BIAS	Auto Turning BIAS	NFB	Negative Feed Back
ATT	ATTenuator	NORM	NORMal
BAL	BALance	NR	Noise Reduction
BEF	Band Elimination Filter	OSC	OSCillator (OSCillation)
BSS	Blank Search System	P	Pulse
CAP M	CAPstan Motor	PB	Play Back
CH	CHannel	QMSS	Quick Memory Search System
COMP	COMParator	QR	Quick Reverse
CONT	CONTinuance	R CH	Right CHannel
CRLP	Computer Recording Level Processing	REC	RECord (RECording)
CS	Chip Select	REV	REVerse
D/A	Digital/Analog	ROT	ROTation
DC	Direct Current	REW	REWind
DET	DETector	SEC	SECond
DISCRI	DISCRImminator	SELE	SELEctor
DUB	DUBbing	SENS	SENSitivity
EQ	EQualizer	SEPP	Single Ended Push Pull
FF (or F.FWD)	Fast Foward	SIG	SIGnal
FLD	FLuoresent Display	SPECT	SPECTrum
FREQ	FREQuency	STD	STanDard
FWD	ForWarD	SW	SWitch
GND	GrouND	SYSCON	SYStem CONtrol
H	High	TP	Test Point
HPF	High Pass Filter	TRIG	TRIGa
IND	INDicator	VCA	Voltage Control Attenuator
IPLS	Instant Program Location System	VOL	VOLume
L	Low	VOLT	VOLtage
L CH	Left CHannel	VR	Variable Resistor
LED	Light Emitining Diode	X'TAL	cysTAL
MEMO	MEMOry	X1	Normal speed
MICOM	MIcroCOMputer	X2	Dubble speed


AKAI
DSP
CONTROLLER
LEVEL
DEMO DISPLAY
SURROUND EFFECT
LIVENESS
ROOM SIZE
1
2
3
4
5
AUDIO ROOM
CLUB
CONCERT HALL
CHURCH
THEATER
VIRTUAL ROOM SIMULATOR / LIVE EDITION
MEMO
P.EQ CH
SPEAKER
LISTENER
POSITION

VIRTUAL ROOM SIMULATOR/LIVE EDITION

MODEL EA-890

SPECIFICATION

Type of equalizer	DSP parametric equalizer
Control band	Parametric 3 band
Control frequency	60/80/100/130/160/250/500/1 k/2 k/4 k/8 k/13 k/ 20 kHz
Control range	± 10 dB
Super bass effects	6 to 15 dB / 63 Hz
Dimensions	270 (W) x 98 (H) x 298 (D) mm
Weight	1.5 kg
Power requirement	Supplied from AX-890
Power consumption	10 W (Nominal 6 W)

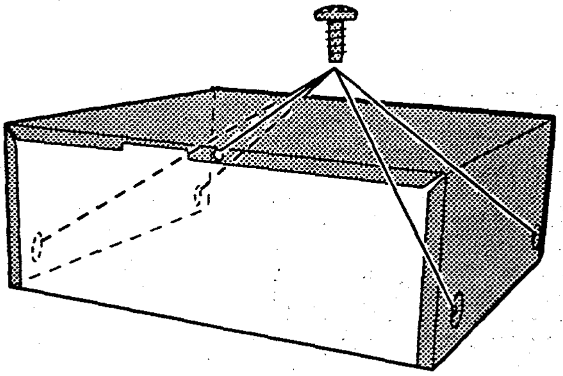
* For improvement purposes, specifications and disign are subject to change without notice.

I. DISASSEMBLY

In case of trouble etc., necessitating dismantling, please dismantle in the order shown in the illustrations.
Reassemble in the reverse order.

1. Removal of UPPER COVER

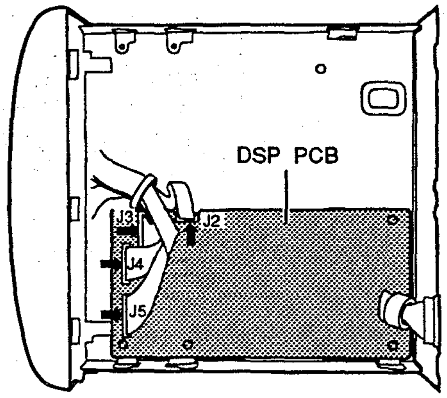
1) Remove the five screws.



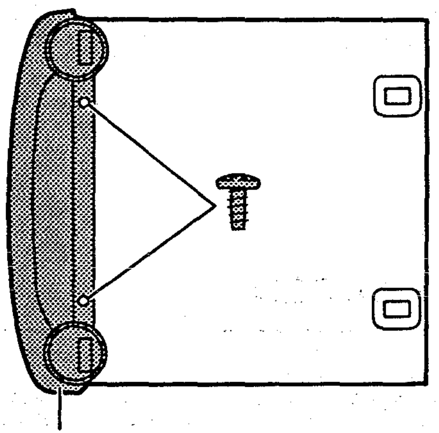
2) Remove the UPPER COVER.

2. Removal of FRONT PANEL

1) Unlock the stoppers of the J2, J3, J4 and J5 connectors on the DSP PCB by pulling them upward (refer to Note: 2 on page 10) and disconnect the flat cables.

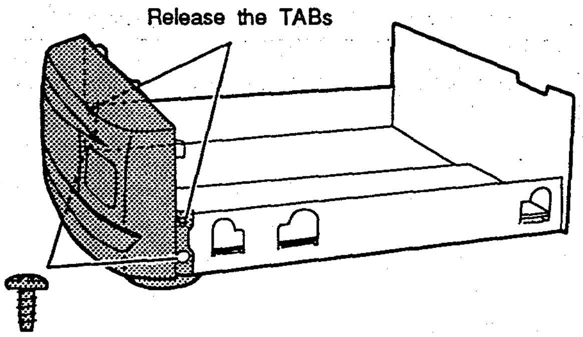


2) Remove the two screws on the bottom.



FRONT PANEL

3) Remove the two screws on both the sides and then remove the FRONT PANEL BLOCK while releasing the two tabs.



II. PRINCIPAL PARTS LOCATION

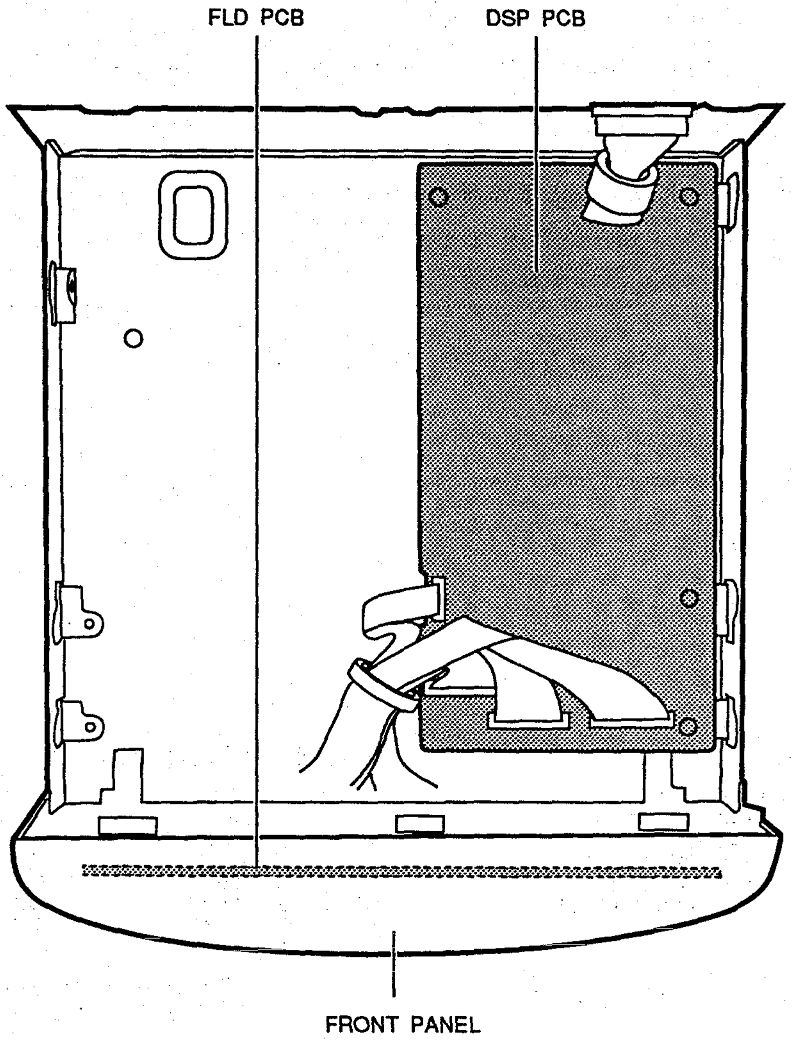

FLD PCB
DSP PCB
FRONT PANEL

Fig. 2-1 Top view

III. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list the Part No., Model No. and the description of earch part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

2. HEAD BASE BLOCK

Ref. No.	Part. No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20x03STL CMT
4	ZS-536488	BID20x08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in the figure.

b) PC Block

2. MAIN PC BOARD

Ref. No.	Part. No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A] : AAL (U.S.A)
[S] : SAA (Australia)
[B] : BEAB (England)
[U] : U/T (Universal Area)
[C] : CSA (Canada)
[E] : CEE (Europe)
[V] : VDE (Germany)
[J] : JPN (Japan)
[Y] : Custom

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

⚠ (✱) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ (✱) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCUTITÉDE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT.

1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	ED-307572	D SILICON H 1SS131
2	ED-511907	D SILICON 1N4002 100/1.0A
3	ED-393759J	D ZENER H HZS6B1L
4	EH-422066J	COMP R RGLE8T 473J
5	EI-419359J	IC AK4501-VS
6	EI-387938J	IC HD74LS05P
7	EI-422088J	IC HY62256ALJ-70
8	EI-425472J	IC M38173M6-278FP RX1DSPC1
9	EI-393325J	IC M5218AP
10	EI-213390	IC NJM4558D
11	EI-408393J	IC ST24C01B1
12	EI-419358J	IC UPD6383GF-3BA
13	EI-418663J	OSC CE CST6.30MGW-TF01 T05
14	EI-422308N	OSC X'TAL HC-49/U 22579.2KHZ
15	EM-419262M	IND FL BJ232GK
16	✱ER-331619	R FUSE H S10 ERD2FC 1/4W 39R0G
17	✱ER-307565	R FUSE H S10 ERD2FC 1/4W 6R8J
18	✱ER-328519	R FUSE H S10 ERD2FC 1/4W 68R0G
19	✱ER-412063J	R FUSE V T05 ERD2FCV 1/4W1500G
20	✱ER-401042J	R FUSE V T05 ERD2FCV 1/4W33R0G
21	ES-394818J	SW TACT SOR-123HS T05
22	ES-394427J	SW TACT SOR-133HS T05
23	ES-422074J	SW TACT SOR-143HS T05
24	ET-363953	TR DTA114TS
25	ET-369248	TR DTA114YS
26	ET-405334J	TR DTA123JS T05
27	ET-354415	TR DTA144ES
28	✱ET-354365	TR DTC114YS
29	ET-354414	TR DTC144ES
30	ET-353899	TR 2SA1317 S,T,U
31	ET-397160J	TR 2SC3330 R,S,T,U,V
32	ET-361736	TR 2SC3576
33	ET-396072J	TR 2SD2159 V,W
34	ET-408842J	TR 2SD2394 E,F

2. P.C. BOARD BLOCK

Ref. No.	Part No.	Description
1	BA-D3018T030A	ML PC(#) DSP BLK EA-890(U)/ML

PC (#) DSP BLK CONSISTS OF FOLLOWING P.C. BOARDS.
✱ DSP P.C. BOARD
✱ FLD P.C. BOARD

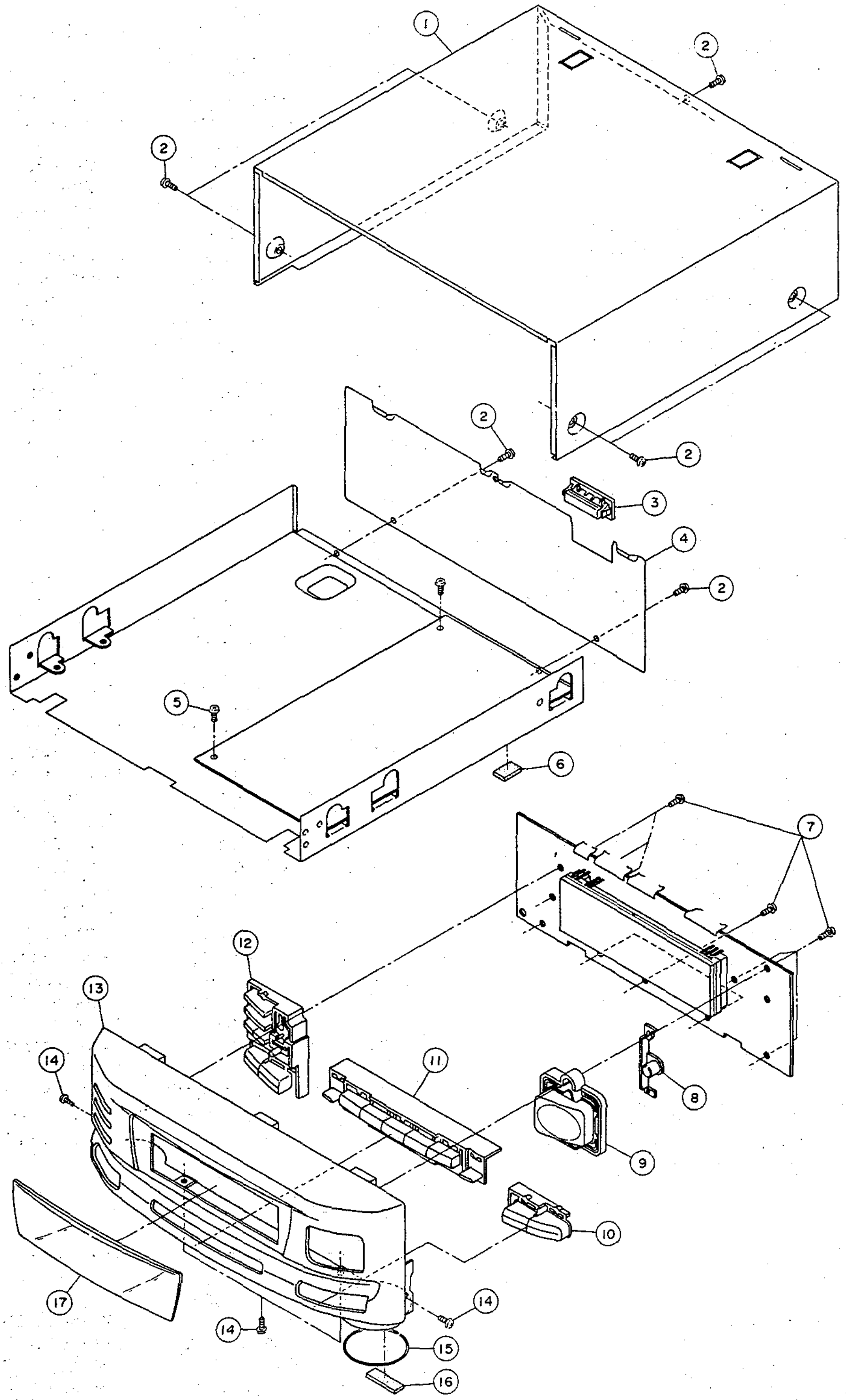
3. DSP P.C. BOARD

Ref. No.	Part No.	Description
D21	ED-307572	D SILICON H 1SS131
D22	ED-307572	D SILICON H 1SS131
D23	ED-307572	D SILICON H 1SS131
D31	ED-307572	D SILICON H 1SS131
D71	ED-511907	D SILICON 1N4002 100/1.0A
D72	ED-511907	D SILICON 1N4002 100/1.0A
D73	ED-511907	D SILICON 1N4002 100/1.0A
D74	ED-511907	D SILICON 1N4002 100/1.0A
D75	ED-511907	D SILICON 1N4002 100/1.0A
D76	ED-511907	D SILICON 1N4002 100/1.0A
D77	ED-393759J	D ZENER H HZS6B1L
D78	ED-393759J	D ZENER H HZS6B1L
D79	ED-393759J	D ZENER H HZS6B1L
D82	✱ED-393759J	D ZENER H HZS6B1L
D83	ED-393759J	D ZENER H HZS6B1L
D84	✱ED-393759J	D ZENER H HZS6B1L
D101	ED-307572	D SILICON H 1SS131
D201	ED-307572	D SILICON H 1SS131
FR71	✱ER-401042J	R FUSE V T05 ERD2FCV 1/4W33R0G
FR72	✱ER-412063J	R FUSE V T05 ERD2FCV 1/4W1500G
FR73	✱ER-331619	R FUSE H S10 ERD2FC 1/4W 39R0G
FR74	✱ER-307565	R FUSE H S10 ERD2FC 1/4W 6R8J
FR75	✱ER-328519	R FUSE H S10 ERD2FC 1/4W 68R0G
FR76	✱ER-328519	R FUSE H S10 ERD2FC 1/4W 68R0G
IB1	EH-422066J	COMP R RGLE8T 473J
IB2	EH-422066J	COMP R RGLE8T 473J
IC1	EI-419359J	IC AK4501-VS
IC2	EI-425472J	IC M38173M6-278FP RX1DSPC1
IC3	EI-419358J	IC UPD6383GF-3BA
IC5	EI-408393J	IC ST24C01B1
IC6	EI-422088J	IC HY62256ALJ-70
IC7	EI-422088J	IC HY62256ALJ-70
IC8	EI-387938J	IC HD74LS05P
IC101	EI-213390	IC NJM4558D
IC111	EI-393325J	IC M5218AP
IC112	EI-213390	IC NJM4558D
IC201	EI-213390	IC NJM4558D
L1	EO-351866	COIL FIX 1 LAP02 F05 330K
L2	EO-354600	COIL FIX 1 LAP02 F05 101K
TR21	ET-354415	TR DTA144ES
TR22	ET-354415	TR DTA144ES
TR23	ET-363953	TR DTA114TS
TR31	ET-369248	TR DTA114YS
TR32	ET-369248	TR DTA114YS
TR33	ET-369248	TR DTA114YS
TR34	ET-369248	TR DTA114YS
TR35	ET-369248	TR DTA114YS
TR36	ET-369248	TR DTA114YS
TR37	ET-369248	TR DTA114YS
TR38	ET-369248	TR DTA114YS
TR39	ET-405334J	TR DTA123JS T05
TR40	ET-354414	TR DTC144ES
TR71	ET-396072J	TR 2SD2159 V,W
TR72	ET-353899	TR 2SA1317 S,T,U
TR73	ET-408842J	TR 2SD2394 E,F
TR74	ET-408842J	TR 2SD2394 E,F
TR75	✱ET-354365	TR DTC114YS
TR76	ET-361736	TR 2SC3576
TR77	ET-361736	TR 2SC3576
TR78	ET-369248	TR DTA114YS
TR111	ET-397160J	TR 2SC3330 R,S,T,U,V
TR112	ET-397160J	TR 2SC3330 R,S,T,U,V
TR113	ET-397160J	TR 2SC3330 R,S,T,U,V
TR211	ET-397160J	TR 2SC3330 R,S,T,U,V
TR212	ET-397160J	TR 2SC3330 R,S,T,U,V
TR213	ET-397160J	TR 2SC3330 R,S,T,U,V
W1	EW-422295N	WIREASS.HFG07172301SPL580 17P
X1	EI-422308N	OSC X'TAL HC-49/U 22579.2KHZ
X3	EI-418663J	OSC CE CST6.30MGW-TF01 T05

4. FLD P.C. BOARD

Ref. No.	Part No.	Description
IN301	EM-419262M	IND FL BJ232GK
TS301	ES-394818J	SW TACT SOR-123HS T05
TS302	ES-394818J	SW TACT SOR-123HS T05
TS303	ES-422074J	SW TACT SOR-143HS T05
TS304	ES-394427J	SW TACT SOR-133HS T05
TS305	ES-394818J	SW TACT SOR-123HS T05
TS306	ES-394818J	SW TACT SOR-123HS T05
TS307	ES-394427J	SW TACT SOR-133HS T05
TS308	ES-394427J	SW TACT SOR-133HS T05
TS309	ES-394427J	SW TACT SOR-133HS T05
TS310	ES-394427J	SW TACT SOR-133HS T05
TS311	ES-394427J	SW TACT SOR-133HS T05
TS312	ES-394427J	SW TACT SOR-133HS T05
TS313	ES-394427J	SW TACT SOR-133HS T05
TS314	ES-394427J	SW TACT SOR-133HS T05
TS315	ES-394818J	SW TACT SOR-123HS T05
TS316	ES-394427J	SW TACT SOR-133HS T05
TS317	ES-394427J	SW TACT SOR-133HS T05
TS318	ES-394427J	SW TACT SOR-133HS T05
TS319	ES-394427J	SW TACT SOR-133HS T05
TS320	ES-394818J	SW TACT SOR-123HS T05

FINAL ASSEMBLY BLOCK



5. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
1	SP-420661M	COVER UPPER (SG)
2	ZS-394412J	BT BID30X08STL BZN PROJECTION
3	SZ-407909M	WIRE HOLDER (SG)
4-A	SP-420671M	PANEL REAR EA-890(U) (SG)
4-B	SP-420662M	PANEL REAR EA-890(E) (SG)
5	ZS-404181J	BT BID30X06STL BZN
6	SA-407840M	CUSHION FOOT REAR (SG)
7	ZS-393515J	BT BID30X10STL BZN
8	SZ-420653M	HOLDER CURSOR (SG)
9	SB-420657M	BUTTON CURSOR (SG)
10	SB-419949M	BUTTON CHANNEL(2) (SG)
11	SB-420656M	BUTTON MOOD (SG)
12	SB-419947M	BUTTON TIMER(2) (SG)
13	SP-420655M	PANEL FRONT EA-890 (SG)
14	ZS-394414J	BT BID30X08STL BZN
15	SZ-419923M	RING FOOT(1) (SG)
16	SA-394136M	CUSHION FOOT (SG)
17	SE-420659M	WINDOW FLD-EA (SG)

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

INDEX

Part No.	Ref. No.
BAD3018T030A	2-1
ED307572	3-D21
ED307572	3-D22
ED307572	3-D23
ED307572	3-D31
ED307572	3-D101
ED307572	3-D201
ED393759J	3-D77
ED393759J	3-D78
ED393759J	3-D79
ED393759J	3-D82
ED393759J	3-D83
ED393759J	3-D84
ED511907	3-D71
ED511907	3-D72
ED511907	3-D73
ED511907	3-D74
ED511907	3-D75
ED511907	3-D76
EH422066J	3-IB1
EH422066J	3-IB2
EI213390	3-IC101
EI213390	3-IC112
EI213390	3-IC201
EI387938J	3-IC8
EI393325J	3-IC111
EI408393J	3-IC5
EI418663J	3-X3
EI419358J	3-IC3
EI419359J	3-IC1
EI422088J	3-IC6
EI422088J	3-IC7
EI422308N	3-X1
EI425472J	3-IC2
EM419262M	4-IN301
EO351866	3-L1
EO354600	3-L2
ER307565	3-FR74
ER328519	3-FR75
ER328519	3-FR76
ER331619	3-FR73
ER401042J	3-FR71
ER412063J	3-FR72
ES394427J	4-TS304
ES394427J	4-TS307
ES394427J	4-TS308
ES394427J	4-TS309
ES394427J	4-TS310
ES394427J	4-TS311
ES394427J	4-TS312
ES394427J	4-TS313
ES394427J	4-TS314
ES394427J	4-TS316
ES394427J	4-TS317
ES394427J	4-TS318
ES394427J	4-TS319
ES394818J	4-TS301
ES394818J	4-TS302
ES394818J	4-TS305
ES394818J	4-TS306
ES394818J	4-TS315
ES394818J	4-TS320
ES422074J	4-TS303
ET353899	3-TR72
ET354365	3-TR75
ET354414	3-TR40
ET354415	3-TR21
ET354415	3-TR22
ET361736	3-TR76
ET361736	3-TR77
ET363953	3-TR23
ET369248	3-TR31
ET369248	3-TR32
ET369248	3-TR33
ET369248	3-TR34
ET369248	3-TR35
ET369248	3-TR36
ET369248	3-TR37
ET369248	3-TR38
ET369248	3-TR78
ET396072J	3-TR71
ET397160J	3-TR111
ET397160J	3-TR112
ET397160J	3-TR113
ET397160J	3-TR211
ET397160J	3-TR212
ET397160J	3-TR213
ET405334J	3-TR39
ET408842J	3-TR73
ET408842J	3-TR74
EW422295N	3-W1
SA394136M	5-16
SA407840M	5-6
SB419947M	5-12
SB419949M	5-10
SB420656M	5-11
SB420657M	5-9
SE420659M	5-17
SP420655M	5-13
SP420661M	5-1
SP420662M	5-4-B
SP420671M	5-4-A
SZ407909M	5-3
SZ419923M	5-15
SZ420653M	5-8
ZS393515J	5-7
ZS394412J	5-2
ZS394414J	5-14
ZS404181J	5-5

SPEAKER SYSTEM

MODEL SR-890

I. SPECIFICATIONS

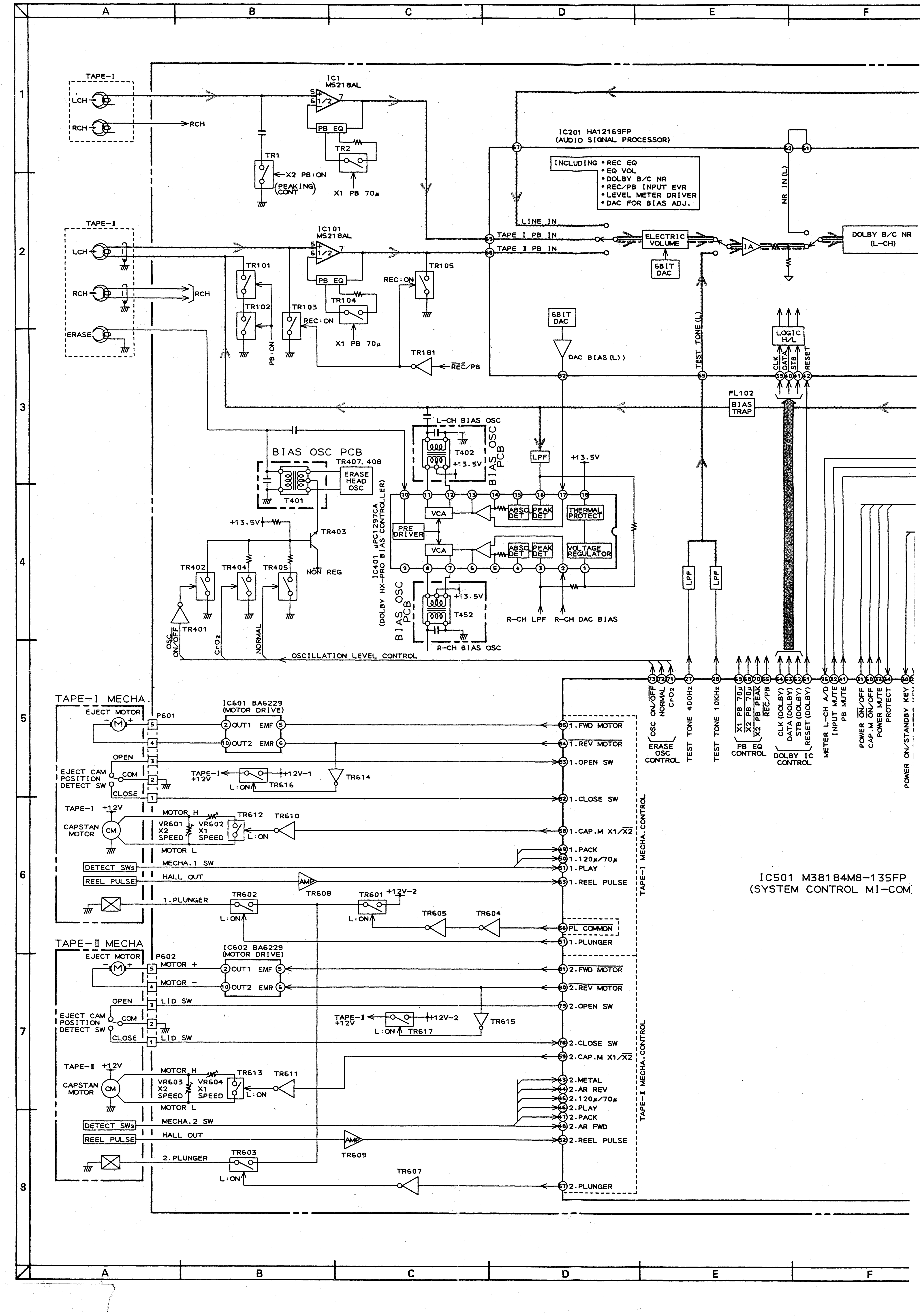
System constructions	3-WAY 3 speakers
Woofer unit	175 mm P.P. cone type
Midrange unit	57 mm cone type
Tweeter unit	20 mm dome type 40 mm ambience unit
System impedance	6 ohms
Max. power input	100 W
Sensitivity	More than 88 dB / Wb/m
Frequency range	40 Hz to 23 kHz
Harmonic distortion	Less than 2 %
Enclosure type	Front bass reflex
Units layout	L/R symmetry
Front grille	Removable (cloth)
Dimentions (with grille)	219 (W) x 417.5 (H) x 300 (D) mm
Net weight	7.2 kg / pc

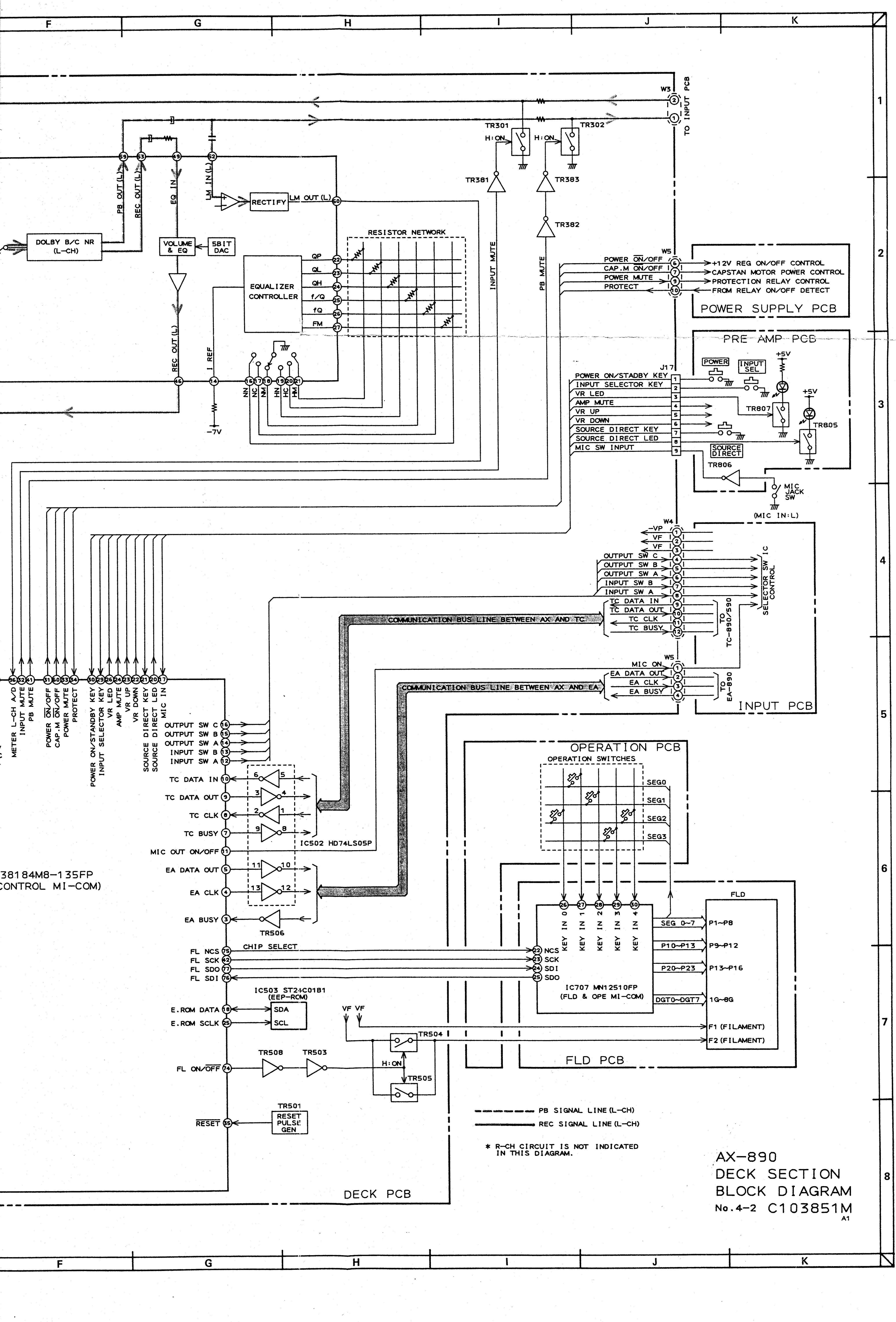
* For improvement purposes, specifications and design are subject to change without notice.

II. PARTS LIST

2-1. MODEL

Ref. No.	Part No.	Description
1	1545-594	SPEAKER PIEZO PT-20T-C [PIEZO-TWEETER]
2	362547	41T-SM3G [ISODYNAMIC-TWEETER]
3	1545-614	SPEAKER MIDRANGE 25DT-970 [MID-RANGE]
4	1545-617	SPEAKER WOOFER 17W-890 [WOOFER]
5	3917-543	FRONT GRILL (R) SR-890
6	3917-544	FRONT GRILL (L) SR-890
7	6554-188	CATCHER [FOR FRONT GRILL]
8	445-020-00	TERMINAL SPEAKER

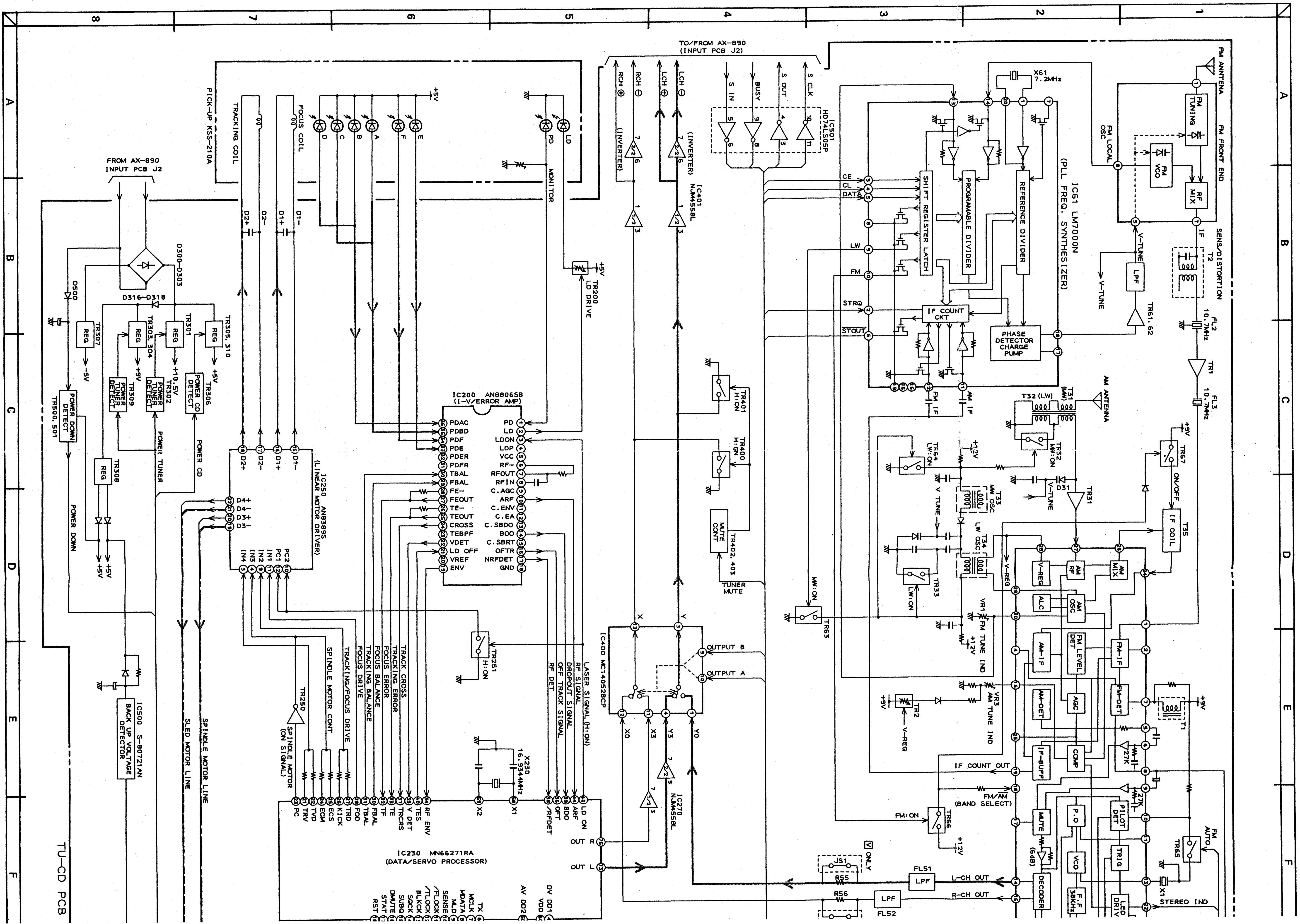

A
B
C
D
E
F
1
2
3
4
5
6
7
8
TAPE-I
LCH
RCH
RCH
IC1
M5218AL
1/2
PB EQ
TR1
TR2
X2 PB:ON
(PEAKING CONT)
X1 PB 70μ
TAPE-II
LCH
RCH
RCH
ERASE
IC101
M5218AL
1/2
PB EQ
TR101
TR102
TR103
TR104
TR105
PB:ON
REC:ON
REC:ON
X1 PB 70μ
TR181
REC/PB
IC201 HA12169FP
(AUDIO SIGNAL PROCESSOR)
INCLUDING • REC EQ
• EQ VOL
• DOLBY B/C NR
• REC/PB INPUT EVR
• LEVEL METER DRIVER
• DAC FOR BIAS ADJ.
LINE IN
TAPE I PB IN
TAPE II PB IN
ELECTRIC VOLUME
6BIT DAC
IA
NR IN (L)
DOLBY B/C NR (L-CH)
6BIT DAC
DAC BIAS (L)
TEST TONE (L)
LOGIC H/L
CLK
DATA
STB
RESET
FL102
BIAS TRAP
BIAS OSC PCB
TR407, 408
ERASE HEAD OSC
T401
+13.5V
TR403
NON REG
TR402
TR404
TR405
TR401
OSC ON/OFF
CrO2
NORMAL
OSCILLATION LEVEL CONTROL
IC401 μPC1297CA
(DOLBY HX-PRO BIAS CONTROLLER)
L-CH BIAS OSC
T402
+13.5V
BIAS OSC PCB
PRE DRIVER
VCA
VCA
ABSO DET
PEAK DET
ABSO DET
PEAK DET
THERMAL PROTECT
VOLTAGE REGULATOR
LPF
+13.5V
BIAS OSC PCB
T452
+13.5V
R-CH BIAS OSC
R-CH LPF
R-CH DAC BIAS
LPF
LPF
OSC ON/OFF
NORMAL
CrO2
ERASE OSC CONTROL
TEST TONE 400Hz
TEST TONE 10KHz
X1 PB 70μ
X2 PB 70μ
X2 PB PEAK
REC/PB
PB EQ CONTROL
CLK (DOLBY)
DATA (DOLBY)
STB (DOLBY)
RESET (DOLBY)
DOLBY IC CONTROL
METER L-CH A/D
INPUT MUTE
PB MUTE
POWER ON/OFF
CAP.M ON/OFF
POWER MUTE
PROTECT
POWER ON/STANDBY KEY
TAPE-I MECHA.
EJECT MOTOR
P601
IC601 BA6229
(MOTOR DRIVE)
OUT1 EMF
OUT2 EMR
OPEN
COM
CLOSE
EJECT CAM POSITION DETECT SW
TAPE-I +12V
TR616
L:ON
+12V-1
TR614
TAPE-I +12V
CAPSTAN MOTOR
CM
MOTOR H
VR601 X2 SPEED
VR602 X1 SPEED
MOTOR L
TR612
TR610
L:ON
DETECT SWs
MECHA.1 SW
REEL PULSE
HALL OUT
AMP
TR608
1.PLUNGER
TR602
L:ON
TR601
+12V-2
L:ON
TR605
TR604
1.FWD MOTOR
1.REV MOTOR
1.OPEN SW
1.CLOSE SW
1.CAP.M X1/X2
1.PACK
1.120μ/70μ
1.PLAY
1.REEL PULSE
PL COMMON
1.PLUNGER
TAPE-I MECHA.CONTROL
IC501 M38184M8-135FP
(SYSTEM CONTROL MI-COM)
TAPE-II MECHA
EJECT MOTOR
P602
MOTOR +
MOTOR −
IC602 BA6229
(MOTOR DRIVE)
OUT1 EMF
OUT2 EMR
OPEN
LID SW
COM
CLOSE
LID SW
EJECT CAM POSITION DETECT SW
TAPE-II +12V
TR617
L:ON
+12V-2
TR615
TAPE-II +12V
CAPSTAN MOTOR
CM
MOTOR H
VR603 X2 SPEED
VR604 X1 SPEED
MOTOR L
TR613
TR611
L:ON
DETECT SWs
MECHA.2 SW
REEL PULSE
HALL OUT
AMP
TR609
2.PLUNGER
TR603
L:ON
TR607
2.FWD MOTOR
2.REV MOTOR
2.OPEN SW
2.CLOSE SW
2.CAP.M X1/X2
2.METAL
2.AR REV
2.120μ/70μ
2.PLAY
2.PACK
2.AR FWD
2.REEL PULSE
2.PLUNGER
TAPE-II MECHA.CONTROL

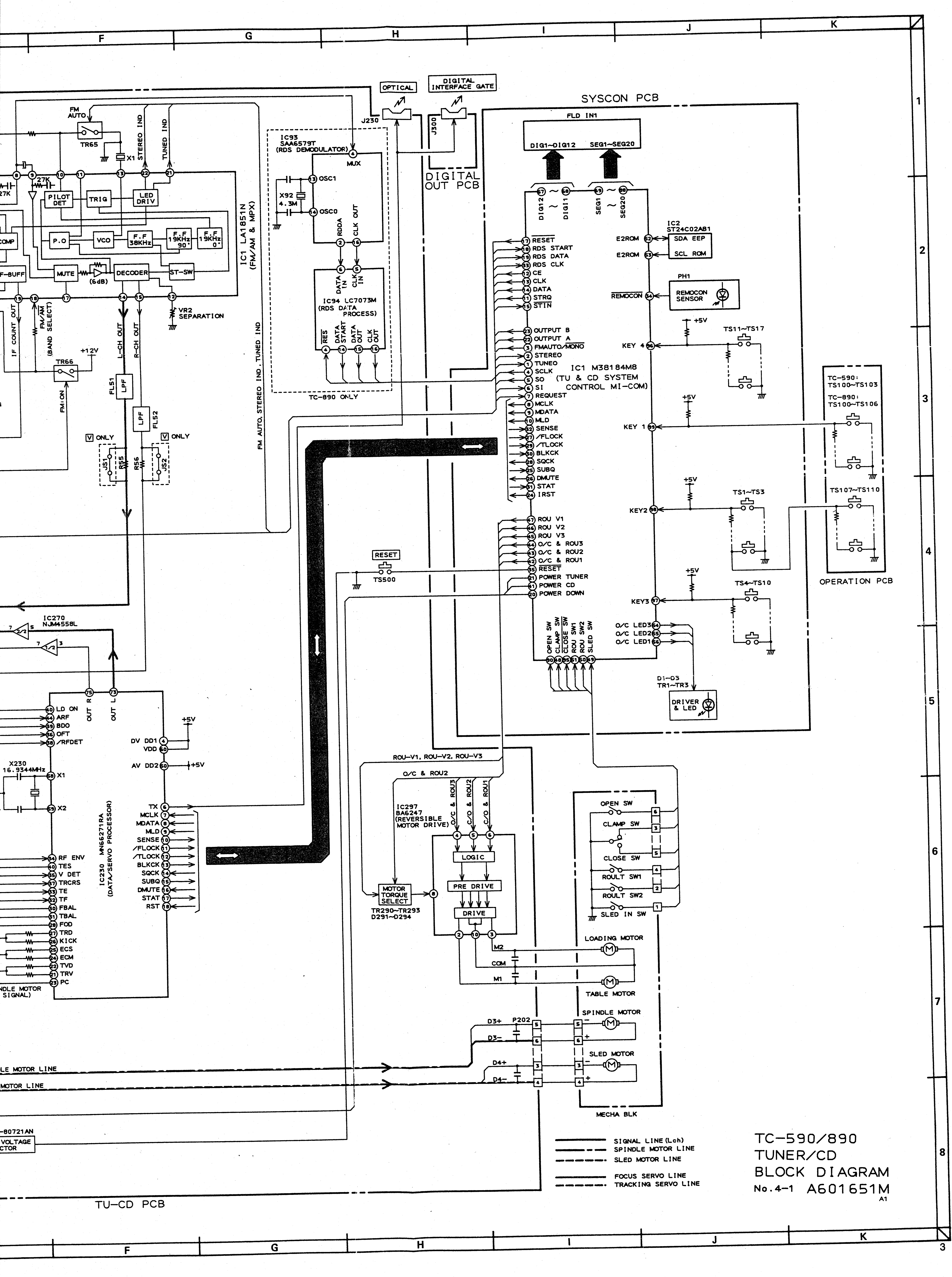


F
G
H
I
J
K
1
2
3
4
5
6
7
8
W3
TO INPUT PCB
TR301
TR302
H:ON
H:ON
TR381
TR383
TR382
INPUT MUTE
PB MUTE
PB OUT (L)
REC OUT (L)
EQ IN
LM IN (L)
RECTIFY
LM OUT (L)
DOLBY B/C NR (L-CH)
VOLUME & EQ
5BIT DAC
EQUALIZER CONTROLLER
QP
QL
QH
f/Q
fQ
FM
RESISTOR NETWORK
REC OUT (L)
I REF
-7V
NN
NC
NM
HN
HC
HM
W5
POWER ON/OFF
CAP.M ON/OFF
POWER MUTE
PROTECT
+12V REG ON/OFF CONTROL
CAPSTAN MOTOR POWER CONTROL
PROTECTION RELAY CONTROL
FROM RELAY ON/OFF DETECT
POWER SUPPLY PCB
PRE AMP PCB
J17
POWER ON/STADBY KEY
INPUT SELECTOR KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURCE DIRECT KEY
SOURCE DIRECT LED
MIC SW INPUT
POWER
INPUT SEL
+5V
TR807
TR805
SOURCE DIRECT
TR806
MIC JACK SW
(MIC IN:L)
W4
-VP
VF
VF
OUTPUT SW C
OUTPUT SW B
OUTPUT SW A
INPUT SW B
INPUT SW A
TC DATA IN
TC DATA OUT
TC CLK
TC BUSY
SELECTOR SW IC CONTROL
TO TC-890/590
COMMUNICATION BUS LINE BETWEEN AX AND TC
W5
MIC ON
EA DATA OUT
EA CLK
EA BUSY
TO EA-890
COMMUNICATION BUS LINE BETWEEN AX AND EA
INPUT PCB
METER L-CH A/D
INPUT MUTE
PB MUTE
POWER ON/OFF
CAP.M ON/OFF
POWER MUTE
PROTECT
POWER ON/STANDBY KEY
INPUT SELECTOR KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURCE DIRECT KEY
SOURCE DIRECT LED
MIC IN
OUTPUT SW C
OUTPUT SW B
OUTPUT SW A
INPUT SW B
INPUT SW A
TC DATA IN
TC DATA OUT
TC CLK
TC BUSY
MIC OUT ON/OFF
EA DATA OUT
EA CLK
EA BUSY
IC502 HD74LS05P
TR506
38184M8-135FP
CONTROL MI-COM)
OPERATION PCB
OPERATION SWITCHES
SEG0
SEG1
SEG2
SEG3
FLD
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
KEY IN 4
SEG 0~7
P10~P13
P20~P23
DGT0~DGT7
P1~P8
P9~P12
P13~P16
1G~8G
F1 (FILAMENT)
F2 (FILAMENT)
CHIP SELECT
FL NCS
FL SCK
FL SDO
FL SDI
NCS
SCK
SDI
SDO
IC707 MN12510FP
(FLD & OPE MI-COM)
IC503 ST24C01B1
(EEP-ROM)
E.ROM DATA
E.ROM SCLK
SDA
SCL
VF VF
TR504
TR505
H:ON
TR508
TR503
FL ON/OFF
FLD PCB
TR501
RESET PULSE GEN
RESET
DECK PCB
PB SIGNAL LINE (L-CH)
REC SIGNAL LINE (L-CH)
A1

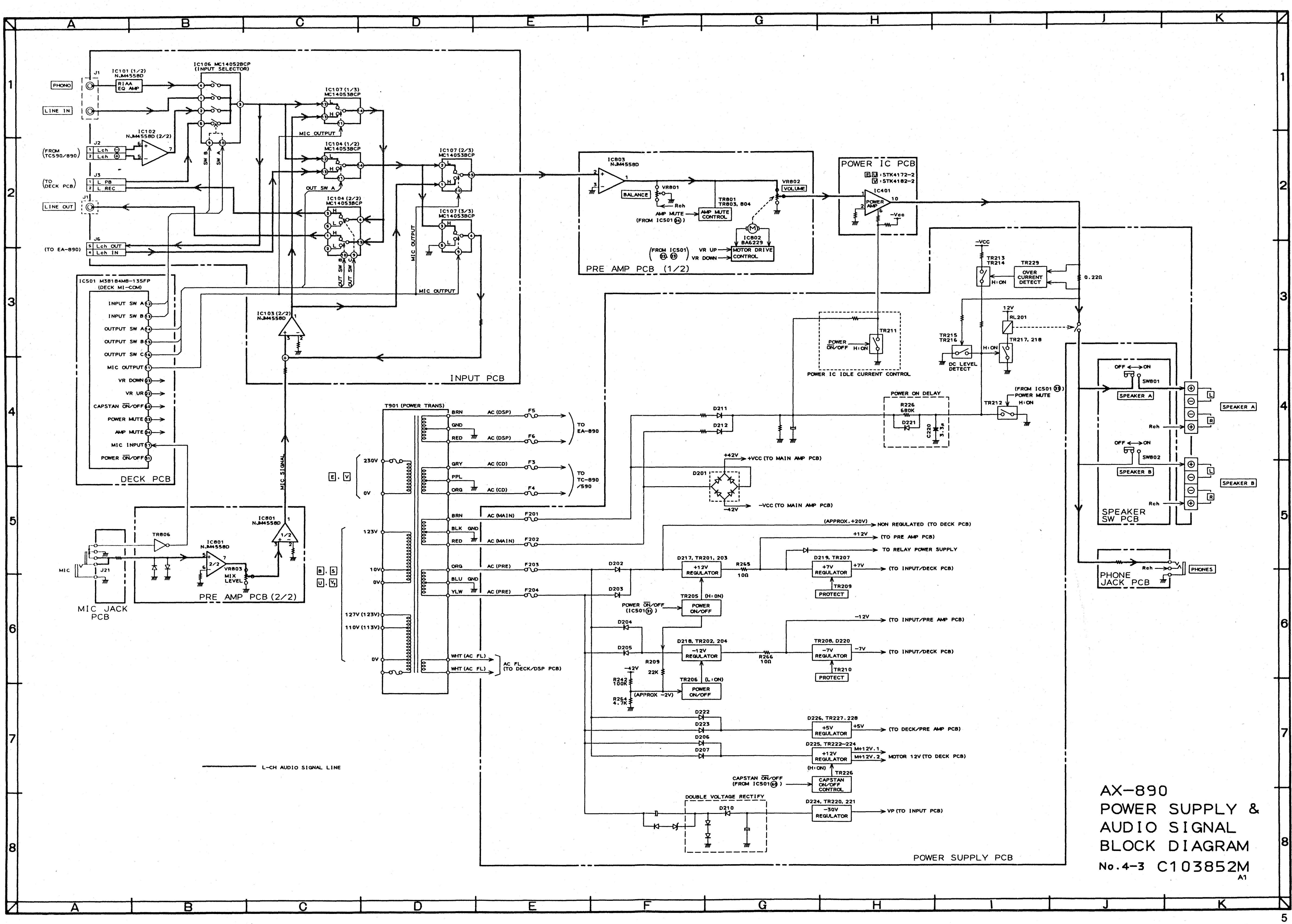
* R-CH CIRCUIT IS NOT INDICATED IN THIS DIAGRAM.

AX-890
DECK SECTION
BLOCK DIAGRAM
No.4-2 C103851M

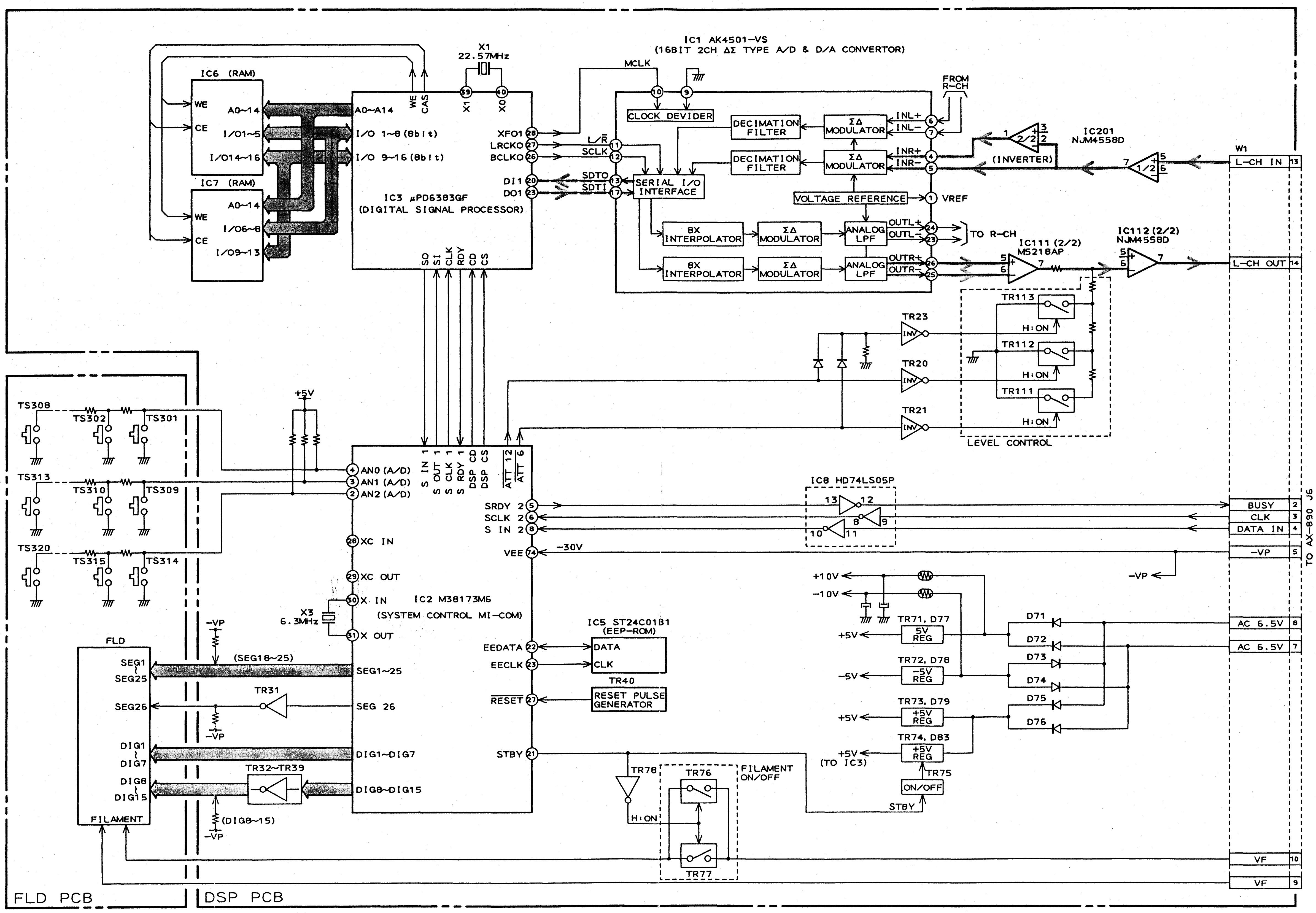

TU-CD PCB
TO/FROM AX-890
(INPUT PCB J2)
FROM AX-890
INPUT PCB J2
PICK-UP KSS-210A
TRACKING COIL
FOCUS COIL
MONITOR
TR200
LD DRIVE
D300~D303
D316~D318
D500
TR307
TR303, 304
TR301
TR305, 310
REG
-5V
+9V
+10.5V
+5V
TR309
POWER TUNER DETECT
TR302
TR306
POWER CD DETECT
TR500, 501
POWER DOWN DETECT
TR308
POWER TUNER
POWER CD
POWER DOWN
IC500 S-80721AN
BACK UP VOLTAGE DETECTOR
SLED MOTOR LINE
SPINDLE MOTOR LINE
IC250 AN8389S
(LINEAR MOTOR DRIVER)
D2+ D2- D1+ D1-
D4+ D4- D3+ D3-
IN4 IN3 IN2 IN1 PC1 PC2
IC200 AN8806SB
(I-V/ERROR AMP)
PDAC PDBD PDF PDE PDER PDFR TBAL FBAL FE- FEOUT TE- TEOUT CROSS TEBPF VDET LD OFF VREF ENV
PD LD LDON LDP VCC RF- RFOUT RFIN C.AGC ARF C.ENV C.EA C.SBDO BDO C.SBRT OFTR NRFDET GND
TR251
H:ON
TR250
SPINDLE MOTOR
(ON SIGNAL)
SPINDLE MOTOR CONT
TRACKING/FOCUS DRIVE
FOCUS DRIVE
TRACKING BALANCE
FOCUS BALANCE
FOCUS ERROR
TRACKING ERROR
TRACK CROSS
RF DET
OFF TRACK SIGNAL
DROPOUT SIGNAL
RF SIGNAL
LASER SIGNAL (H:ON)
X230
16.9344MHz
IC230 MN66271RA
(DATA/SERVO PROCESSOR)
PC TRV TVD ECM ECS KICK TRD FOD FBAL TBAL TF TE TRCRS V DET TES RF ENV X2 X1 /RFDET OFT BDO ARF LD ON
OUT R
OUT L
TX MCLK MDATA MLD SENSE /FLOCK /TLOCK BLKCK SQCK SUBQ DMUTE STAT RST
AV DD2
DV DD1
VDD
RCH ⊕ RCH ⊖ LCH ⊕ LCH ⊖
(INVERTER)
IC401
NJM4558L
S IN BUSY S OUT S CLK
IC501
HD74LS05P
TR401
H:ON
TR400
H:ON
TR402, 403
MUTE CONT
TUNER MUTE
IC400 MC14052BCP
OUTPUT B
OUTPUT A
X Y X0 X3 Y3 Y0
IC270
NJM4558L
JS1
R55
R56
FL51
FL52
LPF
V ONLY
L-CH OUT
R-CH OUT
IC61 LM7000N
(PLL FREQ. SYNTHESIZER)
X61
7.2MHz
SHIFT REGISTER LATCH
PROGRAMMABLE DIVIDER
REFERENCE DIVIDER
IF COUNT CKT
PHASE DETECTOR CHARGE PUMP
CE CL DATA
LW
FM
STRQ
STOUT
FM IF
AM IF
FM ANTENNA
FM FRONT END
FM TUNING
FM LOCAL OSC
FM VCO
RF MIX
V-TUNE
IF
SENS/DISTORTION
T2
LPF
TR61, 62
FL2
10.7MHz
TR1
FL3
10.7MHz
AM ANTENNA
T31 (MW)
T32 (LW)
TR32
MW:ON
TR64
LW:ON
+12V
V TUNE
T33
MW OSC
D31
TR31
T34
LW OSC
TR33
LW:ON
MW:ON
TR63
VR1
FM TUNE IND
VR3
AM TUNE IND
TR2
+9V
V-REG
TR67
ON/OFF
T35
IF COIL
V-REG
AM RF
AM MIX
ALC
AM OSC
AM-IF
FM LEVEL DET
FM-IF
AM-DET
AGC
FM-DET
T1
IF BUFF
COMP
IF COUNT OUT
FM/AM
(BAND SELECT)
FM:ON
TR66
MUTE
(6dB)
P.O
PILOT DET
TRIG
VCO
F.F
38KHz
DECODER
LED DRIV
STEREO IND
X1
FM AUTO
TR65
27K
A B C D E F
1 2 3 4 5 6 7 8


SYSCON PCB
FLD IN1
DIG1~DIG12
SEG1~SEG20
DIG12
DIG11
SEG1
SEG20
OPTICAL
DIGITAL INTERFACE GATE
J230
J300
DIGITAL OUT PCB
IC93 SAA6579T (RDS DEMODULATOR)
MUX
OSC1
OSC0
X92 4.3M
RDDA
CLK OUT
DATA IN
CLK IN
IC94 LC7073M (RDS DATA PROCESS)
RES
DATA START
DATA OUT
CLK OUT
TC-890 ONLY
FM AUTO
TR65
X1
STEREO IND
TUNED IND
27K
PILOT DET
TRIG
LED DRIV
COMP
P.O
VCO
F.F 38KHz
F.F 19KHz 90°
F.F 19KHz 0°
F-BUFF
MUTE
(6dB)
DECODER
ST-SW
IC1 LA1851N (FM/AM & MPX)
IF COUNT OUT
FM/AM (BAND SELECT)
L-CH OUT
R-CH OUT
VR2 SEPARATION
+12V
TR66
FM: ON
FL51
LPF
FL52
V ONLY
JS1
R55
R56
JS2
FM AUTO, STEREO IND, TUNED IND
RESET
TS500
IC2 ST24C02AB1
E2ROM
SDA EEP
SCL ROM
PH1
REMOCON
REMOCON SENSOR
RESET
RDS START
RDS DATA
RDS CLK
CE
CLK
DATA
STRQ
STIN
OUTPUT B
OUTPUT A
FMAUTO/MONO
STEREO
TUNED
SCLK
SO
SI
REQUEST
MCLK
MDATA
MLD
SENSE
/FLOCK
/TLOCK
BLKCK
SQCK
SUBQ
DMUTE
STAT
IRST
IC1 M38184M8 (TU & CD SYSTEM CONTROL MI-COM)
ROU V1
ROU V2
ROU V3
O/C & ROU3
O/C & ROU2
O/C & ROU1
RESET
POWER TUNER
POWER CD
POWER DOWN
KEY 4
KEY 1
KEY2
KEY3
+5V
TS11~TS17
TS1~TS3
TS4~TS10
TC-590: TS100~TS103
TC-890: TS100~TS106
TS107~TS110
OPERATION PCB
OPEN SW
CLAMP SW
CLOSE SW
ROU SW1
ROU SW2
SLED SW
O/C LED3
O/C LED2
O/C LED1
D1~D3 TR1~TR3
DRIVER & LED
IC270 NJM4558L
1/2
2/2
OUT R
OUT L
LD ON
ARF
BDO
OFT
/RFDET
DV DD1
VDD
AV DD2
X230 16.9344MHz
X1
X2
TX
MCLK
MDATA
MLD
SENSE
/FLOCK
/TLOCK
BLKCK
SQCK
SUBQ
DMUTE
STAT
RST
IC230 MN66271RA (DATA/SERVO PROCESSOR)
RF ENV
TES
V DET
TRCRS
TE
TF
FBAL
TBAL
FOD
TRD
KICK
ECS
ECM
TVD
TRV
PC
NDLE MOTOR SIGNAL)
ROU-V1, ROU-V2, ROU-V3
O/C & ROU2
IC297 BA6247 (REVERSIBLE MOTOR DRIVE)
O/C & ROU3
C/O & ROU2
C/O & ROU1
LOGIC
PRE DRIVE
DRIVE
MOTOR TORQUE SELECT
TR290~TR293 D291~D294
M2
COM
M1
LOADING MOTOR
TABLE MOTOR
OPEN SW
CLAMP SW
CLOSE SW
ROULT SW1
ROULT SW2
SLED IN SW
D3+
D3-
D4+
D4-
P202
SPINDLE MOTOR
SLED MOTOR
MECHA BLK
LE MOTOR LINE
MOTOR LINE
-80721AN
VOLTAGE
CTOR
TU-CD PCB
SIGNAL LINE (Lch)
SPINDLE MOTOR LINE
SLED MOTOR LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
F
G
H
I
J
K
1
2
3
4
5
6
7
8

TC-590/890
TUNER/CD
BLOCK DIAGRAM
No.4-1 A601651M
A1


A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7
8
PHONO
LINE IN
J1
IC101 (1/2) NJM4558D
RIAA EQ AMP
IC106 MC14052BCP (INPUT SELECTOR)
IC107 (1/3) MC14053BCP
MIC OUTPUT
(FROM TC590/890)
J2
L ch
IC102 NJM4558D (2/2)
J3
(TO DECK PCB)
L PB
L REC
LINE OUT
SW B
SW A
IC104 (1/2) MC14053BCP
IC107 (2/3) MC14053BCP
OUT SW A
IC104 (2/2) MC14053BCP
IC107 (3/3) MC14053BCP
J6
(TO EA-890)
Lch OUT
Lch IN
OUT SW B
OUT SW C
MIC OUTPUT
IC501 M38184M8-135FP (DECK MI-COM)
INPUT SW A
INPUT SW B
OUTPUT SW A
OUTPUT SW B
OUTPUT SW C
MIC OUTPUT
VR DOWN
VR UP
CAPSTAN ON/OFF
POWER MUTE
AMP MUTE
MIC INPUT
POWER ON/OFF
DECK PCB
IC103 (2/2) NJM4558D
INPUT PCB
MIC SIGNAL
IC801 NJM4558D
TR806
IC801 NJM4558D
VR803 MIX LEVEL
MIC
J21
MIC JACK PCB
PRE AMP PCB (2/2)
IC803 NJM4558D
BALANCE
VR801
Rch
AMP MUTE
(FROM IC501)
AMP MUTE CONTROL
TR801 TR803, 804
VR802 VOLUME
IC802 BA6229
(FROM IC501)
VR UP
VR DOWN
MOTOR DRIVE CONTROL
PRE AMP PCB (1/2)
POWER IC PCB
E U : STK4172-2
V : STK4182-2
IC401
POWER AMP
-Vcc
-VCC
TR213 TR214
TR229
OVER CURRENT DETECT
0.22Ω
H : ON
12V
RL201
TR215 TR216
TR217, 218
DC LEVEL DETECT
POWER ON/OFF
TR211
POWER IC IDLE CURRENT CONTROL
POWER ON DELAY
R226 680K
D221
C220 3.3μ
TR212
(FROM IC501) POWER MUTE H : ON
OFF ↔ ON
SW801
SPEAKER A
Rch
SW802
SPEAKER B
SPEAKER SW PCB
PHONE JACK PCB
PHONES
T901 (POWER TRANS)
BRN
GND
RED
AC (DSP)
F5
F6
TO EA-890
230V
0V
E, V
GRY
PPL
ORG
AC (CD)
F3
F4
TO TC-890 /590
BRN
BLK
RED
AC (MAIN)
F201
F202
123V
10V
0V
B, S
U, V
ORG
BLU
YLW
AC (PRE)
F203
F204
127V (123V)
110V (113V)
WHT (AC FL)
AC FL (TO DECK/DSP PCB)
D211
D212
+42V
+VCC (TO MAIN AMP PCB)
D201
-VCC (TO MAIN AMP PCB)
-42V
(APPROX. +20V)
NON REGULATED (TO DECK PCB)
+12V
TO PRE AMP PCB
TO RELAY POWER SUPPLY
D202
D203
D217, TR201, 203
+12V REGULATOR
R265 10Ω
D219, TR207
+7V REGULATOR
+7V
(TO INPUT/DECK PCB)
TR209
PROTECT
TR205 (H : ON)
POWER ON/OFF (IC501)
POWER ON/OFF
D204
D205
D218, TR202, 204
-12V REGULATOR
-12V
(TO INPUT/PRE AMP PCB)
R266 10Ω
TR208, D220
-7V REGULATOR
-7V
(TO INPUT/DECK PCB)
TR210
PROTECT
R209 22K
-42V
R242 100K
R264 4.7K
(APPROX -2V)
TR206 (L : ON)
POWER ON/OFF
D222
D223
D206
D207
D226, TR227, 228
+5V REGULATOR
+5V
(TO DECK/PRE AMP PCB)
D225, TR222-224
+12V REGULATOR
M+12V.1
M+12V.2
MOTOR 12V (TO DECK PCB)
(H : ON)
TR226
CAPSTAN ON/OFF (FROM IC501)
CAPSTAN ON/OFF CONTROL
DOUBLE VOLTAGE RECTIFY
D210
D224, TR220, 221
-30V REGULATOR
VP (TO INPUT PCB)
POWER SUPPLY PCB
L-CH AUDIO SIGNAL LINE

AX-890
POWER SUPPLY &
AUDIO SIGNAL
BLOCK DIAGRAM
No.4-3 C103852M
A1

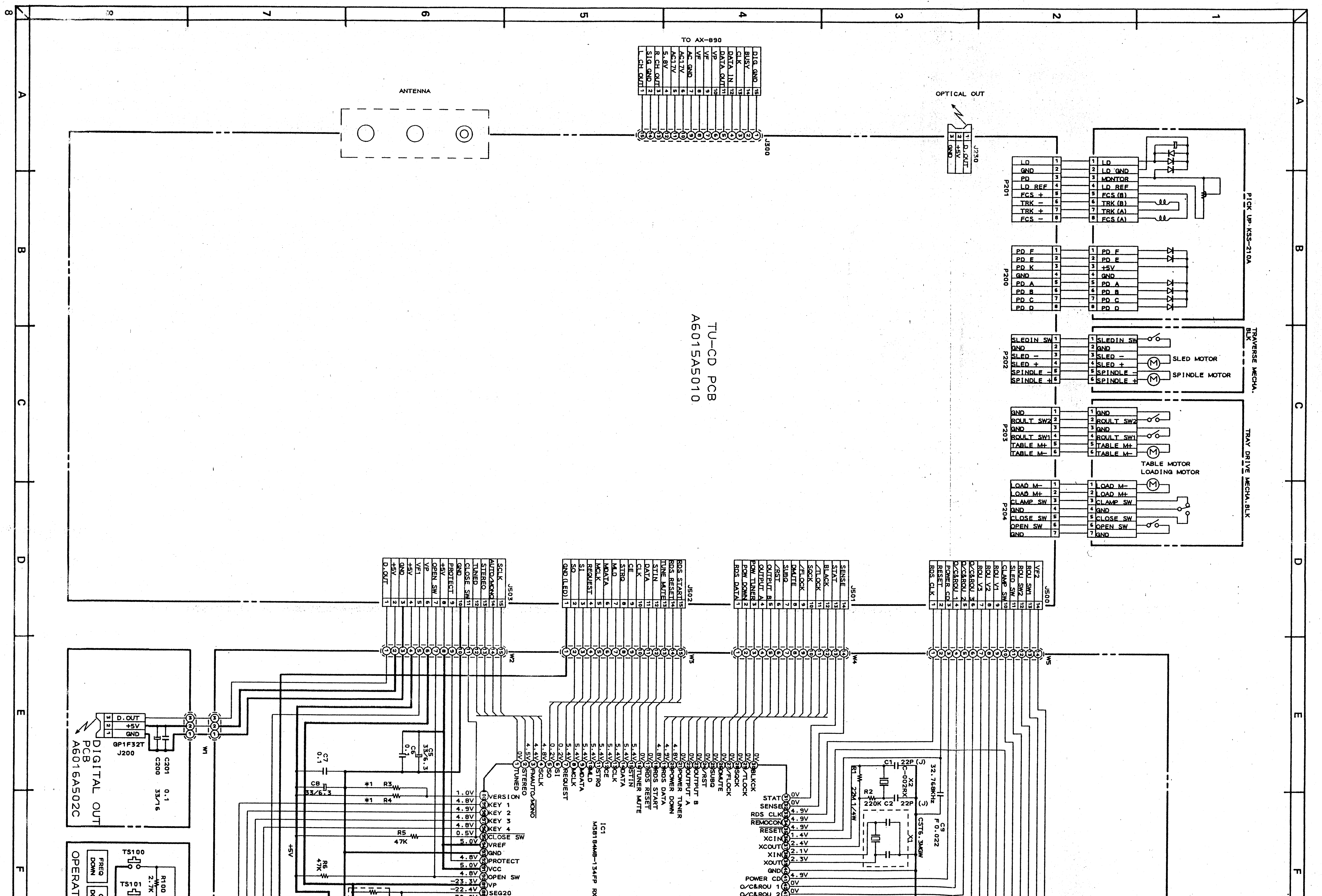

IC6 (RAM)
WE
CE
A0~14
I/O1~5
I/O14~16
IC7 (RAM)
I/O6~8
I/O9~13
X1
22.57MHz
A0~A14
I/O 1~8 (8bit)
I/O 9~16 (8bit)
IC3 μPD6383GF
(DIGITAL SIGNAL PROCESSOR)
XFO1
LRCKO
BCLKO
DI1
DO1
SO SI CLK RDY CD CS
MCLK
IC1 AK4501-VS
(16BIT 2CH ΔΣ TYPE A/D & D/A CONVERTOR)
CLOCK DEVIDER
L/R
SCLK
SDTO
SDTI
SERIAL I/O INTERFACE
DECIMATION FILTER
ΣΔ MODULATOR
INL+
INL−
INR+
INR−
FROM R-CH
VOLTAGE REFERENCE
VREF
8X INTERPOLATOR
ANALOG LPF
OUTL+
OUTL−
OUTR+
OUTR−
TO R-CH
IC201
NJM4558D
(INVERTER)
IC111 (2/2)
M5218AP
IC112 (2/2)
NJM4558D
W1
L-CH IN
L-CH OUT
TR113
TR112
TR111
H:ON
TR23
TR20
TR21
INV
LEVEL CONTROL
TS308
TS302
TS301
TS313
TS310
TS309
TS320
TS315
TS314
+5V
AN0 (A/D)
AN1 (A/D)
AN2 (A/D)
S IN 1
S OUT 1
S CLK 1
S RDY 1
DSP CD
DSP CS
ATT 12
ATT 6
XC IN
XC OUT
X IN
X OUT
X3
6.3MHz
IC2 M38173M6
(SYSTEM CONTROL MI-COM)
SRDY 2
SCLK 2
S IN 2
VEE
−30V
IC8 HD74LS05P
BUSY
CLK
DATA IN
−VP
TO AX-890 J6
+10V
−10V
TR71, D77
5V REG
TR72, D78
−5V REG
TR73, D79
+5V REG
TR74, D83
+5V
(TO IC3)
TR75
ON/OFF
STBY
D71
D72
D73
D74
D75
D76
AC 6.5V
IC5 ST24C01B1
(EEP-ROM)
EEDATA
EECLK
DATA
RESET
TR40
RESET PULSE GENERATOR
FLD
SEG1 ~ SEG25
(SEG18~25)
SEG1~25
SEG26
TR31
SEG 26
DIG1 ~ DIG7
DIG1~DIG7
DIG8 ~ DIG15
TR32~TR39
DIG8~DIG15
(DIG8~15)
FILAMENT
TR78
TR76
TR77
FILAMENT ON/OFF
VF
FLD PCB
DSP PCB

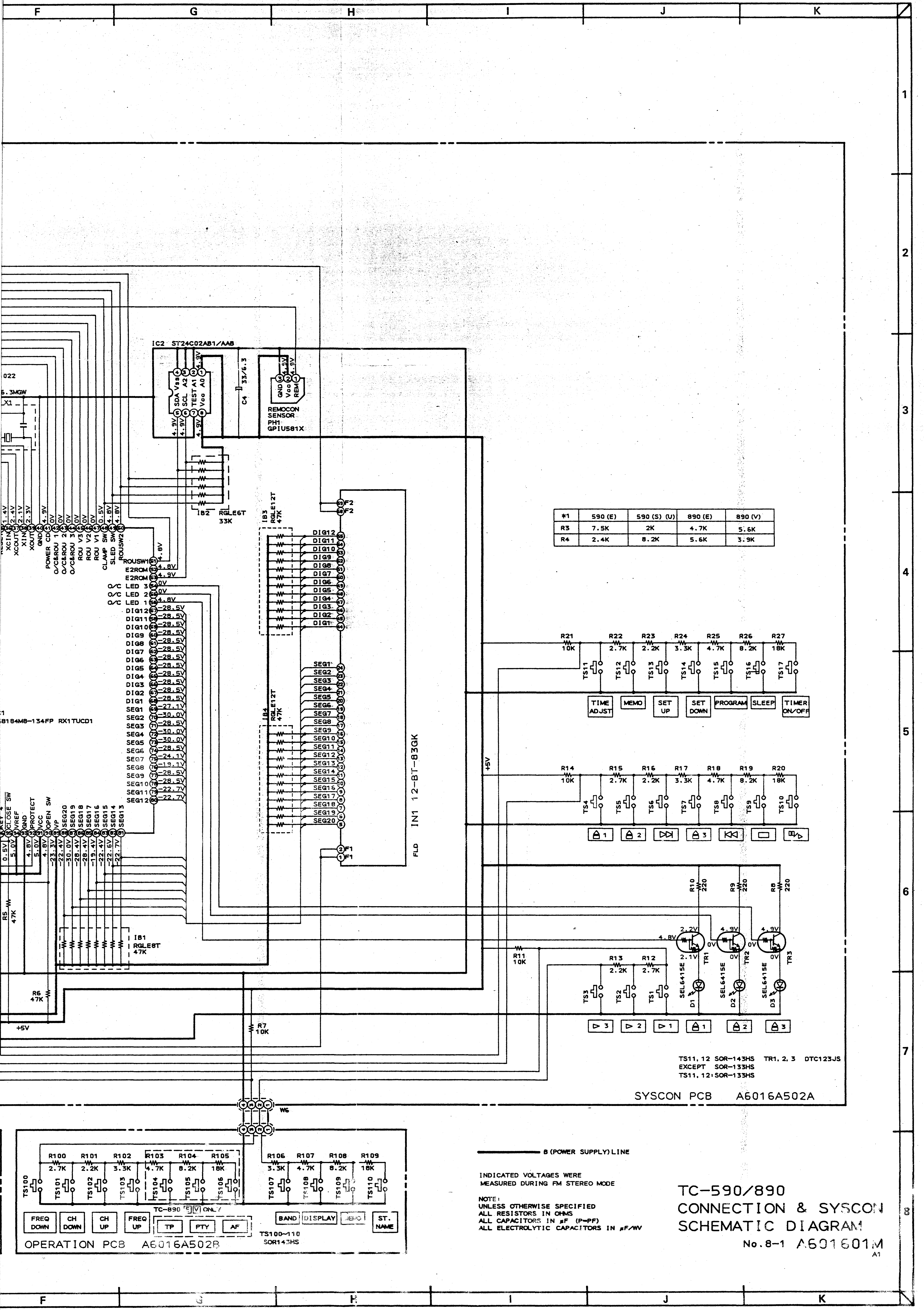
AUDIO SIGNAL LINE (L-CH)

DIGITAL AUDIO SIGNAL LINE

EA-890
BLOCK DIAGRAM

No.4-4 D301851M
A2


TO AX-890
ANTENNA
OPTICAL OUT
J300
J230
D.OUT
+5V
GND
TU-CD PCB
A6015A5010
P201
LD
GND
PD
LD REF
FCS +
TRK −
TRK +
FCS −
LD GND
MONITOR
FCS (B)
TRK (B)
TRK (A)
FCS (A)
PICK UP KSS-210A
P200
PD F
PD E
PD K
PD A
PD B
PD C
PD D
P202
SLEDIN SW
SLED −
SLED +
SPINDLE −
SPINDLE +
SLED MOTOR
SPINDLE MOTOR
TRAVERSE MECHA. BLK
P203
ROULT SW2
ROULT SW1
TABLE M+
TABLE M−
TABLE MOTOR
LOADING MOTOR
TRAY DRIVE MECHA.BLK
P204
LOAD M−
LOAD M+
CLAMP SW
CLOSE SW
OPEN SW
J503
J502
J501
J500
W1
W2
W3
W4
W5
DIGITAL OUT PCB
A6016A502C
GP1F32T
J200
C200
C201
33/16
0.1
OPERAT
TS100
TS101
FREQ DOWN
R100
2.7K
IC1
M38184M8-134FP
VERSION
KEY 1
KEY 2
KEY 3
KEY 4
CLOSE SW
VREF
GND
PROTECT
VCC
OPEN SW
VP
SEG20
TUNED
STEREO
FM/AUTO/MONO
SCLK
SO
SI
REQUEST
MLD
STRQ
CE
CLK
DATA
STIN
TUNER MUTE
RDS RESET
RDS START
RDS DATA
POWER DOWN
POWER TUNER
OUTPUT A
OUTPUT B
/RST
SUBQ
DMUTE
/FLOCK
SQCK
/TLOCK
BLACK
STAT
SENSE
RDS CLK
REMOCON
RESET
XCIN
XCOUT
XIN
XOUT
POWER CD
O/C&ROU 1
O/C&ROU 2
CST6.3MGW
X1
X2
C-002RX
32.768KHz
C1
C2
22P (J)
C9
F 0.022
R1
22M 1/4W
R2
220K
C5
33/6.3
C6
0.1
C7
0.1
C8
33/6.3
R3
R4
*1
R5
47K
R6
47K
+5V
1.0V
4.8V
4.9V
0.5V
5.0V
−23.3V
−22.4V
2.4V
2.1V
2.3V
1.4V
0V


IC2 ST24C02AB1/AAB
SDA Vss
SCL A2
TEST A1
Voo A0
C4 33/6.3
REMOCON SENSOR PH1 GP1U581X
IB2 RGLE6T 33K
IB3 RGLE12T 47K
IB4 RGLE12T 47K
IB1 RGLE8T 47K
FLD IN1 12-BT-83GK
TIME ADJUST
MEMO
SET UP
SET DOWN
PROGRAM
SLEEP
TIMER ON/OFF
SEL6415E
TR1
TR2
TR3
FREQ DOWN
CH DOWN
CH UP
FREQ UP
TP
PTY
AF
BAND
DISPLAY
ST. NAME
TC-890 (E)(V) ONLY
W6
+5V

*1	590 (E)	590 (S) (U)	890 (E)	890 (V)
R3	7.5K	2K	4.7K	5.6K
R4	2.4K	8.2K	5.6K	3.9K

TS11, 12 SOR-143HS TR1, 2, 3 DTC123JS
EXCEPT SOR-133HS
TS11, 12: SOR-133HS

SYSCON PCB A6016A502A

OPERATION PCB A6016A502B

TS100-110
SOR143HS

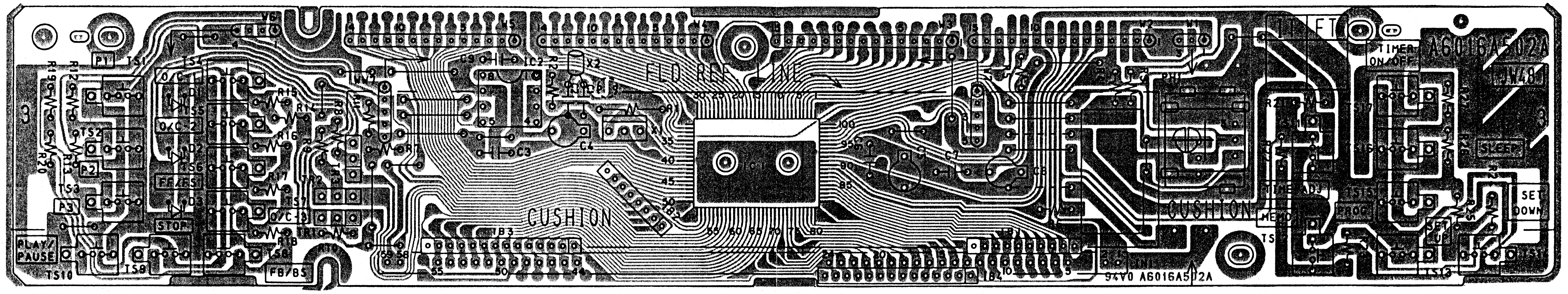
B (POWER SUPPLY) LINE

INDICATED VOLTAGES WERE
MEASURED DURING FM STEREO MODE

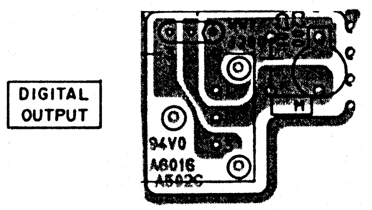
NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV

TC-590/890
CONNECTION & SYSCON SCHEMATIC DIAGRAM

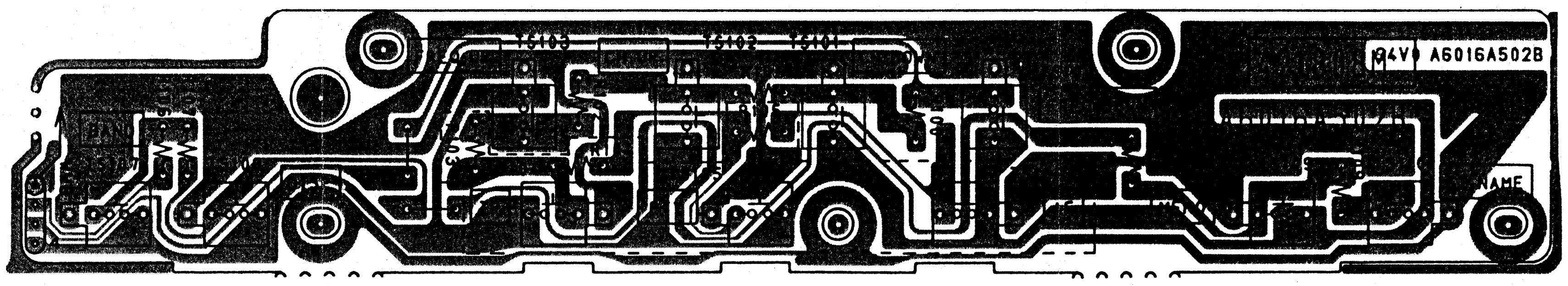
No.8-1 A601601M
A1


PLAY/PAUSE
STOP
FF/FS
FB/BS
CUSHION
FLD REF LINE
TIMER ON/OFF
SLEEP
SET DOWN
MEMO
PROG
94V0 A6016A502A
A6016A502A

SYSCON PCB A6016A502A

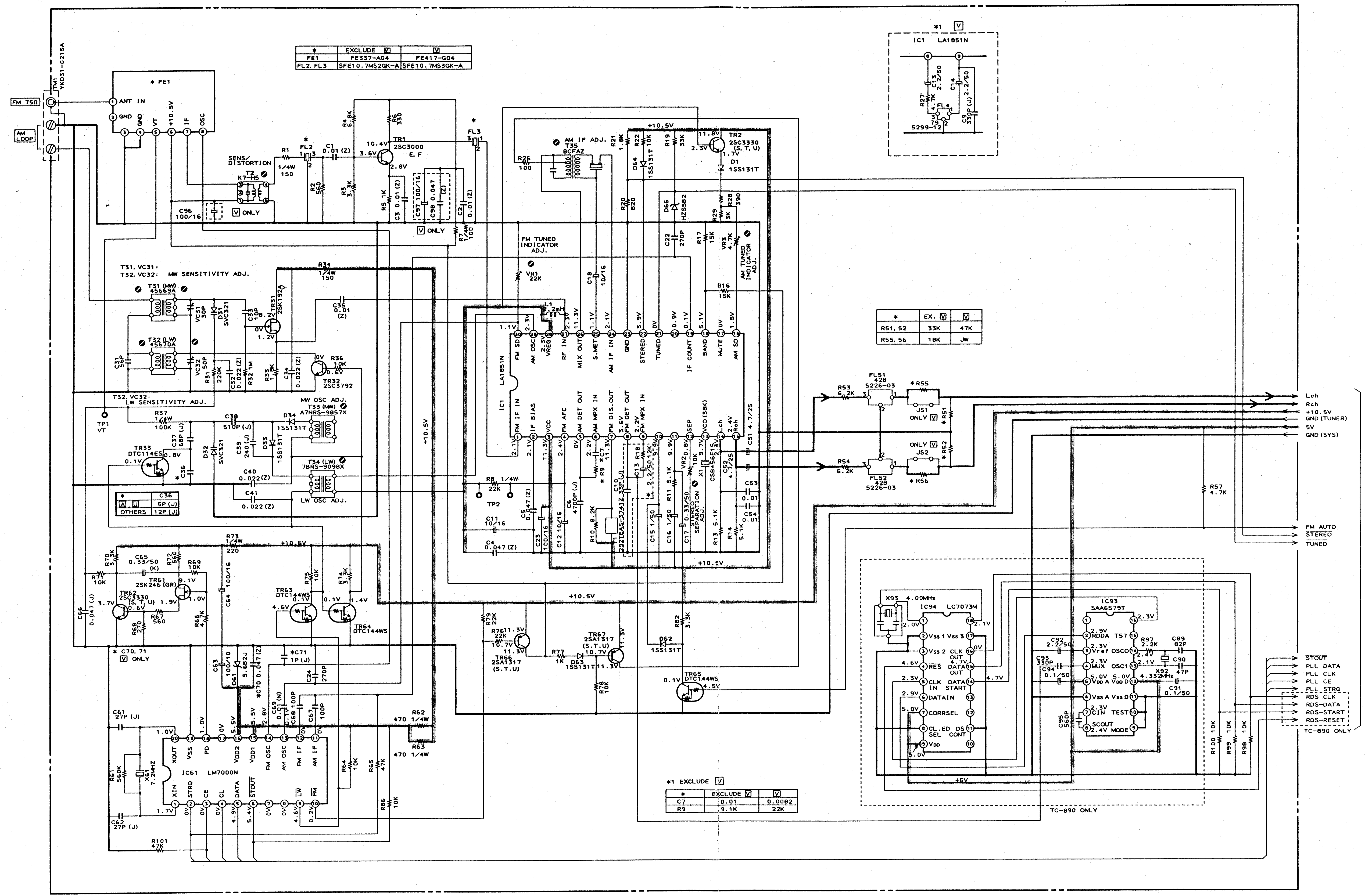

DIGITAL OUTPUT
94V0
A6016
A502C

DIGITAL OUT PCB
A6016A502C


TS103
TS102
TS101
94V0 A6016A502B
NAME

OPERATION PCB A6016A502B

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.
REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT
PARTS INFORMATION.


TM1 YKD31-0215A
FM 75Ω
AM LOOP
* FE1
ANT IN
GND
VT
+10.5V
IF
OSC
SENS/DISTORTION
T2 K7-H5
▽ ONLY
TR1 2SC3000 E, F
FL2
FL3
T31, VC31: T32, VC32: MW SENSITIVITY ADJ.
T31 (MW) 45669A
T32 (LW) 45670A
TR31 2SK192A
TR32 2SC3792
T32, VC32: LW SENSITIVITY ADJ.
MW OSC ADJ. T33 (MW) A7NRS-9857X
T34 (LW) 7BRS-9098X
LW OSC ADJ.
TR33 DTC114ES
TP1 VT
AM IF ADJ. T35 BCFAZ
FM TUNED INDICATOR ADJ.
VR1 22K
IC1 LA1851N
TR2 2SC3330 (S, T, U)
AM TUNED INDICATOR ADJ.
TP2
STEREO SEPARATION ADJ.
X1 CSB456F15
FL51 42B 5226-03
FL52 42B 5226-03
JS1 ONLY ▽
JS2 ONLY ▽
Lch
Rch
+10.5V
GND (TUNER)
5V
GND (SYS)
FM AUTO
STEREO
TUNED
TO TU-CD PCB 2/2
TR61 2SK246 (GR)
TR62 2SC3330 (S, T, U)
TR63 DTC144WS
TR64 DTC144WS
* C70, 71 ▽ ONLY
IC61 LM7000N
X61 7.2MHz
TR65 DTC144WS
TR66 2SA1317 (S.T.U)
TR67 2SA1317 (S.T.U)
X93 4.00MHz
IC94 LC7073M
IC93 SAA6579T
X92 4.332MHz
TC-890 ONLY
STOUT
PLL DATA
PLL CLK
PLL CE
PLL STRQ
RDS-CLK
RDS-DATA
RDS-START
RDS-RESET
TC-890 ONLY
*1 ▽
IC1 LA1851N
FL4 5299-12

*	EXCLUDE ▽	▽
FE1	FE337-A04	FE417-G04
FL2, FL3	SFE10.7MS2GK-A	SFE10.7MS3GK-A

*	C36
A, U	5P (J)
OTHERS	12P (J)

*	EX. ▽	▽
R51, 52	33K	47K
R55, 56	18K	JW

*1 EXCLUDE ▽

*	EXCLUDE ▽	▽
C7	0.01	0.0082
R9	9.1K	22K

TU-CD PCB A6015A5010

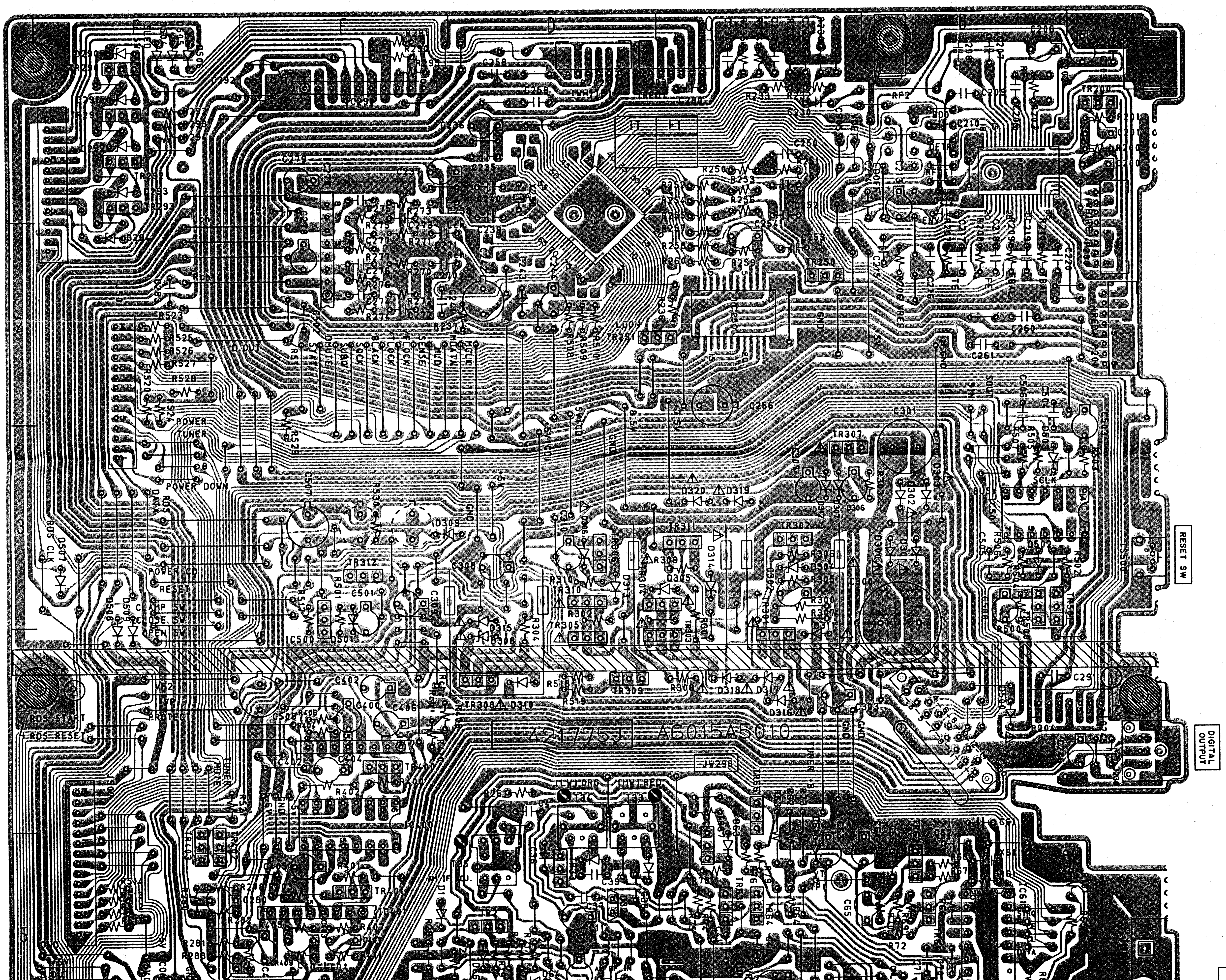
B (POWER SUPPLY) LINE
AUDIO SIGNAL LINE

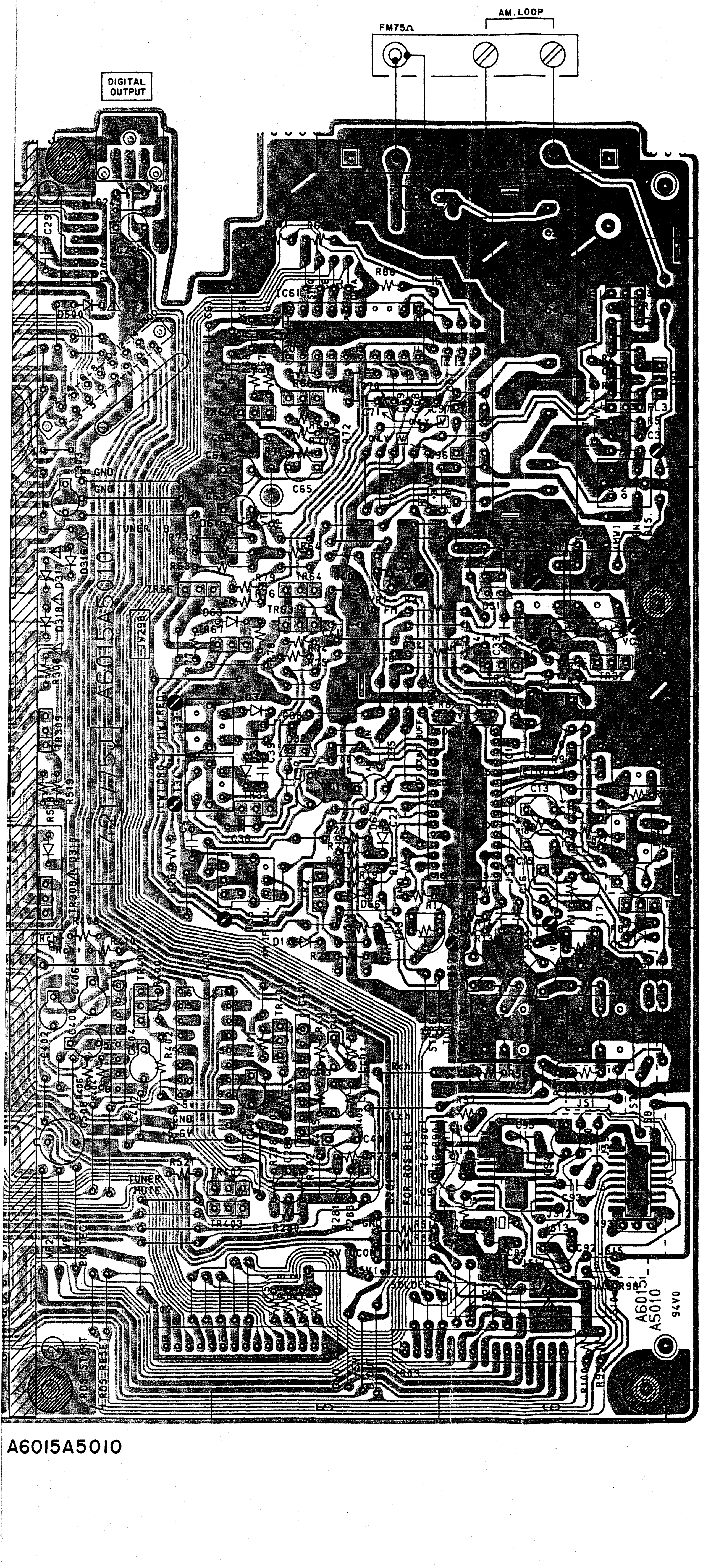
NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W (J)
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV

INDICATED VOLTAGES WERE
MEASURED DURING FM STEREO MODE

TC-590/890
TU-CD (1/2)
SCHEMATIC DIAGRAM
No.8-2 A601503F
A1

TU-CD PCB A6015A5010


RESET SW
DIGITAL OUTPUT
RDS START
RDS RESET
RDS CLK
RDS DATA
POWER DOWN
POWER TUNER
POWER CD
RESET
CLAMP SW
CLOSE SW
OPEN SW
PROTECT
IC500
C301
C256
TR307
TR302
TR311
TR312
D320
D319
4217751 A6015A5010
JW298
TUNER MUTE


DIGITAL OUTPUT
FM75Ω
AM.LOOP
421775J
A6015A5010
A6015
A5010
94V0
RDS START
RDS RESET
TUNER MUTE
TUNER +B
GND
JW298

A6015A5010

PRINCIPAL PARTS LOCATION

ICs

IC1	D6
IC61	B5
IC93	F6
IC94	F6
IC200	B1
IC230	D1,2
IC250	C2
IC270	E2
IC290	E1
IC400	E4,5
IC401	E5
IC402	E4
IC500	E3
IC501	B3

CONNECTORs

J230	A4
J300	B4
J500	F1
J501	F2
J502	F5
J503	F6
P200	A2
P201	A2
P202	D1
P203	C1
P204	A,B4

TRANSISTORs

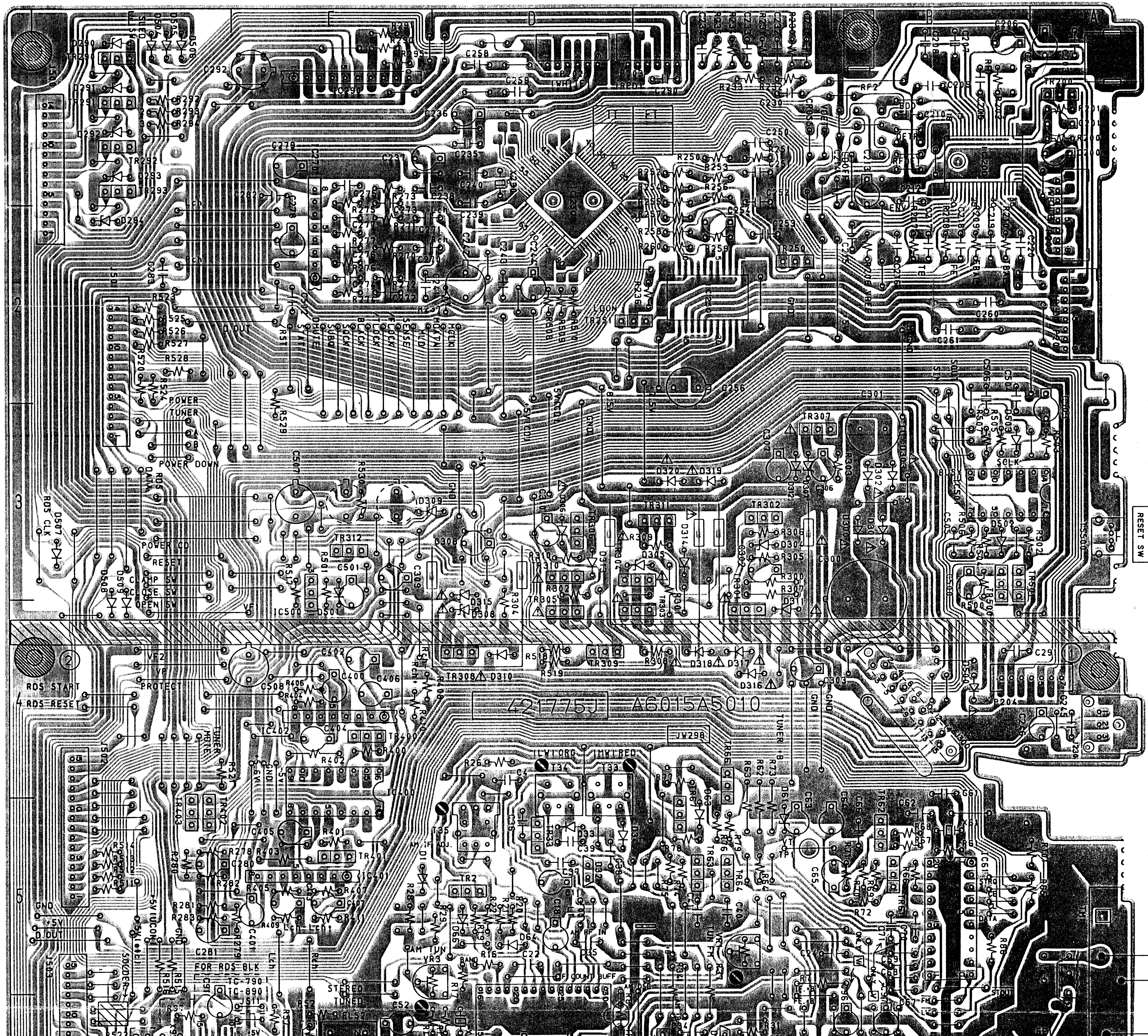
TR1	B6
TR2	D5
TR32	C6
TR33	D5
TR35	C6
TR61	B5
TR62	B5
TR63	C5
TR64	C5
TR65	D6
TR66	C4
TR67	C5
TR200	A1
TR250	C2
TR251	C,D2
TR290	F1
TR291	F1
TR292	F1
TR293	F1
TR301	C4
TR302	C3
TR303	C,D4
TR304	C,D3
TR305	D4
TR306	D3
TR307	C3
TR308	D4
TR309	D4
TR310	D3
TR311	C3
TR312	E3
TR400	E4
TR401	E5
TR402	F5
TR403	F5
TR500	B3
TR501	B3

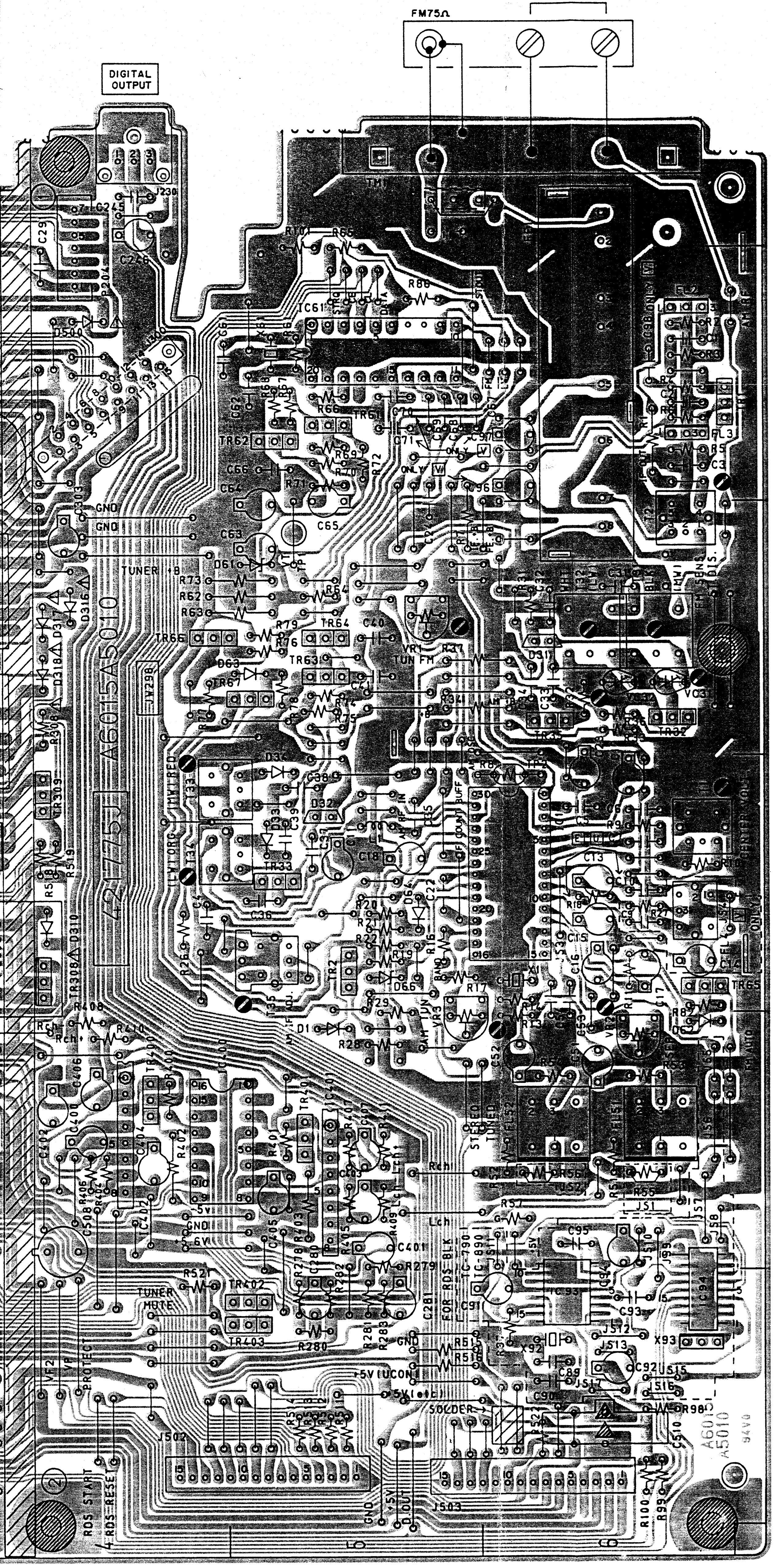
WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.

TU-CD PCB A6015A5010


RESET SW
DIGITAL OUTPUT
FM75Ω
421775J A6015A5010
POWER
TUNER
POWER DOWN
RDS CLK
RDS DATA
POWER CD
RESET
CLAMP 5V
CLOSE 5V
OPEN 5V
VF
VF2
VP
PROTECT
RDS START
RDS RESET
TUNER MUTE
GND
+5V
D OUT
FOR RDS BLK
TC-790
TC-890
STEREO
TUNED
AM TUN
BAND
FM COUNT BUFF
LW1 ORG
MW1 RED
JW298
WHITE
RED
LOCK
SCLK
A
B
C
D
E
F
1
2
3
4
5



A6015A5010

PRINCIPAL PARTS LOCATION

ICs

IC1	D6
IC61	B5
IC93	F6
IC94	F6
IC200	B1
IC230	D1,2
IC250	C2
IC270	E2
IC290	E1
IC400	E4,5
IC401	E5
IC402	E4
IC500	E3
IC501	B3

CONNECTORs

J230	A4
J300	B4
J500	F1
J501	F2
J502	F5
J503	F6
P200	A2
P201	A2
P202	D1
P203	C1
P204	A,B4

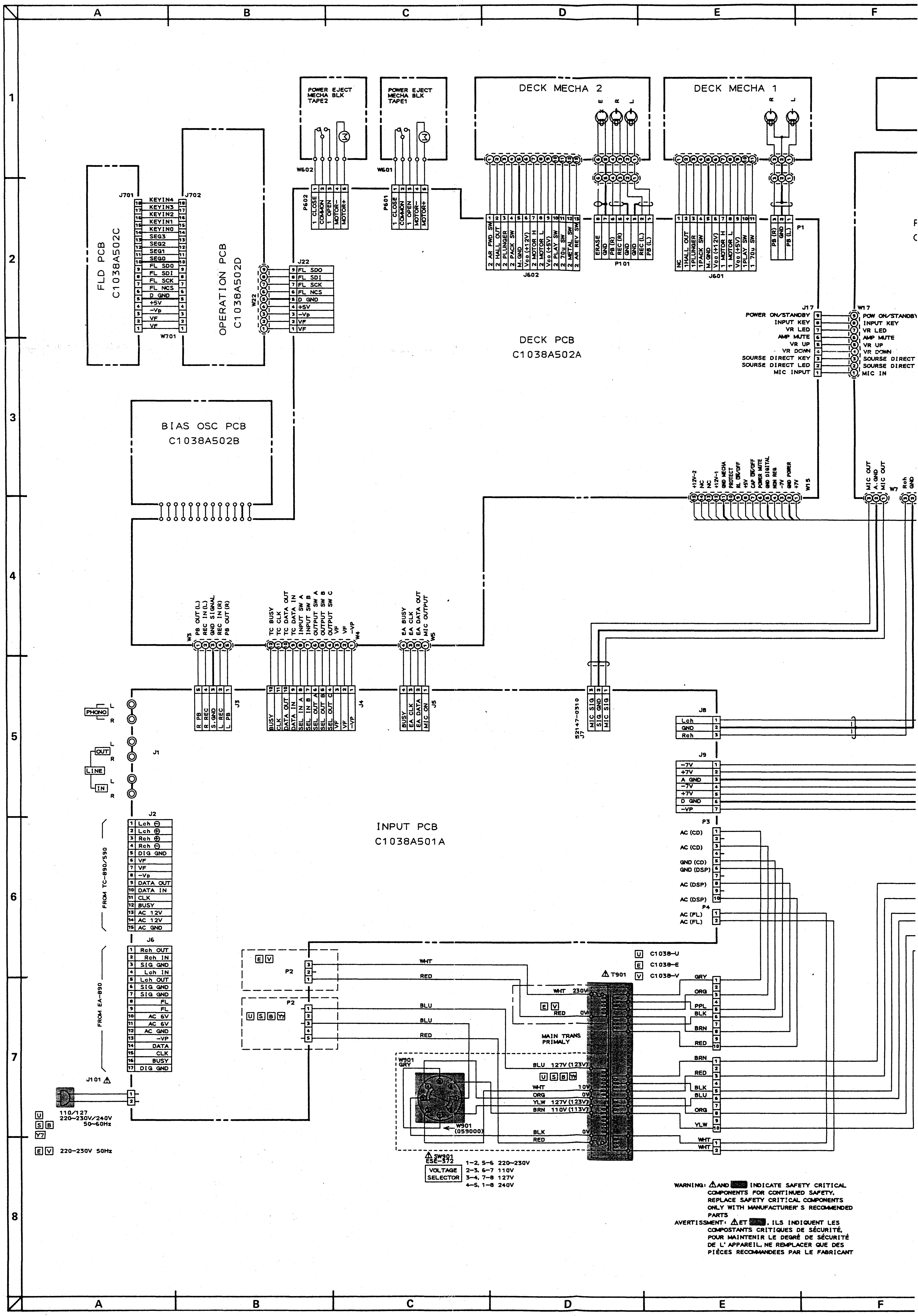
TRANSISTORs

TR1	B6
TR2	D5
TR32	C6
TR33	D5
TR35	C6
TR61	B5
TR62	B5
TR63	C5
TR64	C5
TR65	D6
TR66	C4
TR67	C5
TR200	A1
TR250	C2
TR251	C,D2
TR290	F1
TR291	F1
TR292	F1
TR293	F1
TR301	C4
TR302	C3
TR303	C,D4
TR304	C,D3
TR305	D4
TR306	D3
TR307	C3
TR308	D4
TR309	D4
TR310	D3
TR311	C3
TR312	E3
TR400	E4
TR401	E5
TR402	F5
TR403	F5
TR500	B3
TR501	B3

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

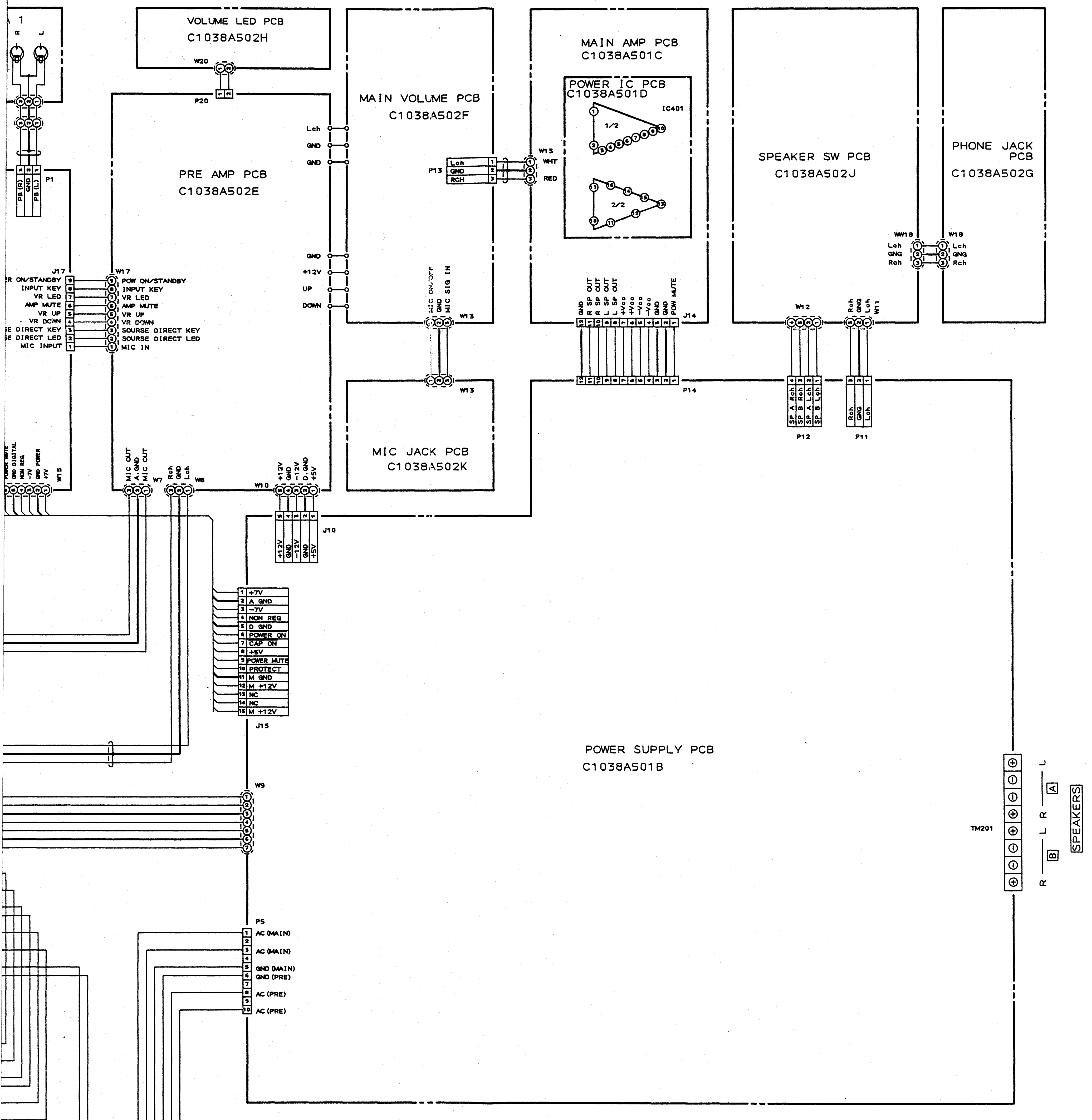
AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.


FLD PCB
C1038A502C
OPERATION PCB
C1038A502D
BIAS OSC PCB
C1038A502B
DECK PCB
C1038A502A
INPUT PCB
C1038A501A
DECK MECHA 2
DECK MECHA 1
POWER EJECT MECHA BLK TAPE2
POWER EJECT MECHA BLK TAPE1
J701
J702
W701
KEYIN4
KEYIN3
KEYIN2
KEYIN1
KEYIN0
SEG3
SEG2
SEG1
SEG0
FL SDO
FL SDI
FL SCK
FL NCS
D GND
+5V
-Vp
VF
VF
W22
J22
W602
W601
P602
P601
1 CLOSE
COMMON
1 OPEN
MOTOR-
MOTOR+
J602
2 AR FWD SW
2 HALL OUT
2 PLUNGER
2 PACK SW
M.GND
Vcc (+12V)
2 MOTOR H
2 MOTOR L
Vcc (+5V)
2 PLAY SW
2 70u SW
2 METAL SW
2 AR REV SW
P101
ERASE
GND
PB (R)
REC (R)
GND
GND
REC (L)
PB (L)
E
R
L
J601
NC
1HALL OUT
1PLUNGER
1PACK SW
M.GND
Vcc (+12V)
1 MOTOR H
1 MOTOR L
Vcc (+5V)
1PLAY SW
1 70u SW
P1
PB (R)
GND
PB (L)
J17
W17
POWER ON/STANDBY
INPUT KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURSE DIRECT KEY
SOURSE DIRECT LED
MIC INPUT
POW ON/STANDBY
INPUT KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURSE DIRECT
SOURSE DIRECT
MIC IN
W15
+12V-2
NC
NC
+12V-1
GND MECHA
PROTECT
BL ON/OFF
+5V
CAP ON/OFF
POWER MUTE
GND DIGITAL
NON REG
-7V
GND POWER
+7V
W7
MIC OUT
A.GND
MIC OUT
Rch
GND
W3
PB OUT (L)
REC IN (L)
GND SIGNAL
REC IN (R)
PB OUT (R)
J3
R PB
R REC
S.GND
L REC
L PB
W4
TC BUSY
TC CLK
TC DATA OUT
TC DATA IN
INPUT SW A
INPUT SW B
OUTPUT SW A
OUTPUT SW B
OUTPUT SW C
VF
VF
-VP
J4
BUSY
CLK
DATA OUT
DATA IN
SEL IN A
SEL IN B
SEL OUT A
SEL OUT B
SEL OUT C
VF
VF
-VP
W5
EA BUSY
EA CLK
EA DATA OUT
MIC OUTPUT
J5
BUSY
EA CLK
EA DATA
MIC ON
52147-0310
J7
MIC SIG
SIG GND
MIC SIG
J8
Lch
GND
Rch
J9
-7V
+7V
A GND
-7V
+7V
D GND
-VP
P3
AC (CD)
AC (CD)
GND (CD)
GND (DSP)
AC (DSP)
AC (DSP)
P4
AC (FL)
AC (FL)
PHONO
LINE
OUT
IN
L
R
J1
J2
FROM TC-890/590
Lch ⊖
Lch ⊕
Rch ⊕
Rch ⊖
DIG GND
VF
VF
-Vp
DATA OUT
DATA IN
CLK
BUSY
AC 12V
AC 12V
AC GND
J6
FROM EA-890
Rch OUT
Rch IN
SIG GND
Lch IN
Lch OUT
SIG GND
SIG GND
FL
FL
AC 6V
AC 6V
AC GND
-VP
DATA
CLK
BUSY
DIG GND
J101 ⚠
U
S B
Y7
110/127
220-230V/240V
50-60Hz
E V
220-230V 50Hz
P2
E V
U S B Y7
WHT
RED
BLU
BLU
RED
⚠ T901
U C1038-U
E C1038-E
V C1038-V
WHT 230V
E V
RED 0V
MAIN TRANS
PRIMALY
W901
GRY
BLU 127V (123V)
U S B Y7
WHT 10V
ORG 0V
YLW 127V (123V)
BRN 110V (113V)
W901
(059000)
BLK 0V
RED
GRY
ORG
PPL
BLK
BRN
RED
BRN
RED
BLK
BLU
ORG
YLW
WHT
WHT
⚠ SW901
ESE-372
VOLTAGE
SELECTOR
1-2, 5-6 220-230V
2-3, 6-7 110V
3-4, 7-8 127V
4-5, 1-8 240V
A
B
C
D
E
F
1
2
3
4
5
6
7
8

WARNING: ⚠ AND ■ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

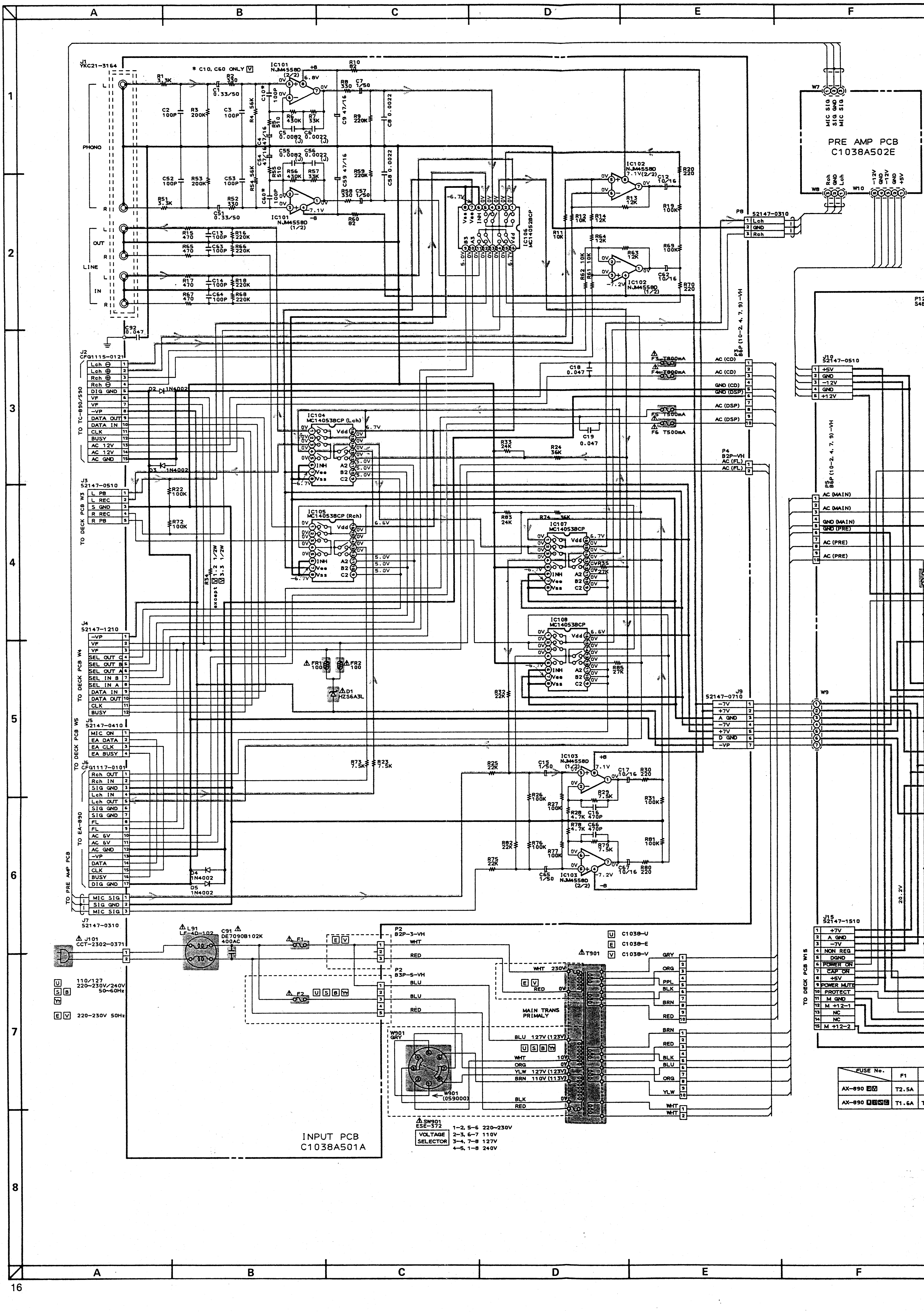
AVERTISSMENT: ⚠ ET ■, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ, POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL. NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

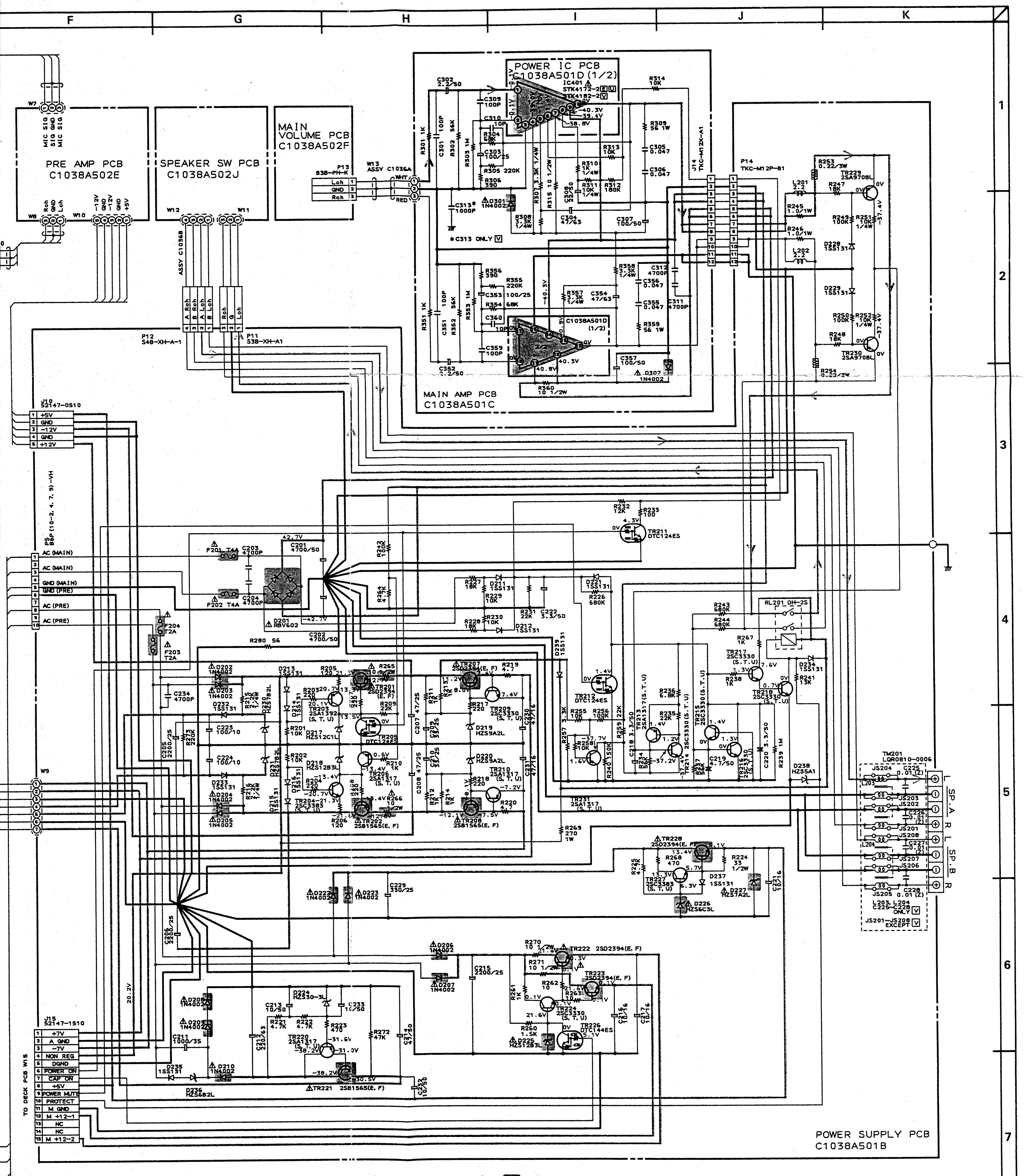

VOLUME LED PCB
C1038A502H
W20
P20
PRE AMP PCB
C1038A502E
Lch
GND
GND
GND
+12V
UP
DOWN
MAIN VOLUME PCB
C1038A502F
P13
Lch
GND
RCH
W13
WHT
RED
MAIN AMP PCB
C1038A501C
POWER IC PCB
C1038A501D
IC401
1/2
2/2
SPEAKER SW PCB
C1038A502J
PHONE JACK PCB
C1038A502G
WW18
W18
Lch
GNG
Rch
R
L
P1
PB (R)
GND
PB (L)
J17
W17
ER ON/STANDBY
INPUT KEY
VR LED
AMP MUTE
VR UP
VR DOWN
E DIRECT KEY
E DIRECT LED
MIC INPUT
POW ON/STANDBY
INPUT KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURSE DIRECT KEY
SOURSE DIRECT LED
MIC IN
MIC ON/OFF
GND
MIC SIG IN
W13
MIC JACK PCB
C1038A502K
GND
R SP OUT
R SP OUT
L SP OUT
L SP OUT
+Vcc
+Vcc
−Vcc
−Vcc
GND
GND
POW MUTE
J14
P14
W12
Rch
GNG
Lch
W11
SP A Rch
SP B Rch
SP A Lch
SP B Lch
P12
Rch
GNG
Lch
P11
POWER MUTE
GND DIGITAL
NON REG
−7V
GND POWER
+7V
W15
MIC OUT
A.GND
MIC OUT
W7
Rch
GND
Lch
W8
W10
+12V
GND
−12V
D.GND
+5V
J10
+12V
GND
−12V
GND
+5V
1 +7V
2 A GND
3 −7V
4 NON REG
5 D GND
6 POWER ON
7 CAP ON
8 +5V
9 POWER MUTE
10 PROTECT
11 M GND
12 M +12V
13 NC
14 NC
15 M +12V
J15
POWER SUPPLY PCB
C1038A501B
W9
TM201
R
L
R
L
B
A
SPEAKERS
P5
1 AC (MAIN)
3 AC (MAIN)
5 GND (MAIN)
6 GND (PRE)
8 AC (PRE)
10 AC (PRE)

NDICATE SAFETY CRITICAL
OR CONTINUED SAFETY.
TY CRITICAL COMPONENTS
NUFACTURER' S RECOMMENDED

. ILS INDIQUENT LES
CRITIQUES DE SÉCURITÉ.
IR LE DEGRÉ DE SÉCURITÉ
L. NE REMPLACER QUE DES
MANDEES PAR LE FABRICANT

AX-890
CONNECTION DIAGRAM
No.8-4 C103801M
A1

J1 YKC21-3164
PHONO
LINE
OUT
IN
* C10, C60 ONLY V
IC101 NJM4558D
IC102 NJM4558D
IC103 NJM4558D
IC104 MC14053BCP (Lch)
IC105 MC14053BCP (Rch)
IC106 MC14052BCP
IC107 MC14053BCP
IC108 MC14053BCP
J2 CFG1115-0121
TO TC-890/590
J3 52147-0510
TO DECK PCB W3
J4 52147-1210
TO DECK PCB W4
J5 52147-0410
TO DECK PCB W5
J6 CFG1117-0101
TO EA-890
TO PRE AMP PCB
J7 52147-0310
R34 except V 1.2 1/2W
V 3.3 1/2W
FR1 100
FR2 100
D1 HZS6A3L
D2 1N4002
D3 1N4002
D4 1N4002
D5 1N4002
P8 52147-0310
P3 B6P (10-2, 4, 7, 9)-VH
F3 T800mA
F4 T800mA
F5 T500mA
F6 T500mA
P4 B2P-VH
J9 52147-0710
W9
J10 52147-0510
P5 B6P (10-2, 4, 7, 9)-VH
PRE AMP PCB C1038A502E
W7
W8
W10
J15 52147-1510
TO DECK PCB W15
J101 CCT-2302-0371
110/127
220-230V/240V 50-60Hz
220-230V 50Hz
L91 LF-4D-102
C91 DE7090B102K 400AC
F1
F2
P2 B2P-3-VH
P2 B3P-5-VH
C1038-U
C1038-E
C1038-V
T901
MAIN TRANS PRIMALY
W901 GRY
W901 (059000)
SW901 ESE-372
VOLTAGE SELECTOR
1-2, 5-6 220-230V
2-3, 6-7 110V
3-4, 7-8 127V
4-5, 1-8 240V
INPUT PCB C1038A501A
FUSE No.
F1
AX-890 EV T2.5A
AX-890 USBY T1.6A
20.2V


PRE AMP PCB C1038A502E
SPEAKER SW PCB C1038A502J
MAIN VOLUME PCB C1038A502F
POWER IC PCB C1038A501D (1/2)
IC401 STK4172-2 STK4182-2
MAIN AMP PCB C1038A501C
POWER SUPPLY PCB C1038A501B
TO DECK PCB W15
J15 52147-1510
+7V
A GND
-7V
NON REG
DGND
POWER ON
CAP ON
+5V
POWER MUTE
PROTECT
M GND
M +12-1
NC
NC
M +12-2
J10 52147-0510
P5 B6P (10-2, 4, 7, 9) -VH
AC (MAIN)
GND (MAIN)
GND (PRE)
AC (PRE)
P12 S4B-XH-A-1
P11 S3B-XH-A1
P13 B3B-PH-K
W13 ASSY C1036A
J14 TKC-M12X-A1
P14 TKC-M12P-B1
RL201 DH-2S
TM201 LQR0810-0006
SP.A
SP.B
L
R
F201 T4A
F202 T4A
F203 T2A
F204 T2A
*C313 ONLY V
JS201~JS208 EXCEPT V
L203, L204 C225~C228 ONLY V
F
G
H
I
J
K
1
2
3
4
5
6
7
8

FUSE No.	F1	F2	F3	F4	F5	F6	F201	F202	F203	F204
AX-890 E V	T2.5A	—	T800mA	T800mA	T500mA	T500mA	T4.0A	T4.0A	T2.0A	T2.0A
AX-890 U B S Y	T1.6A	T1.6A	T800mA	T800mA	T500mA	T500mA	T4.0A	T4.0A	T2.0A	T2.0A

B (POWER SUPPLY) LINE

Lch AUDIO SIGNAL LINE

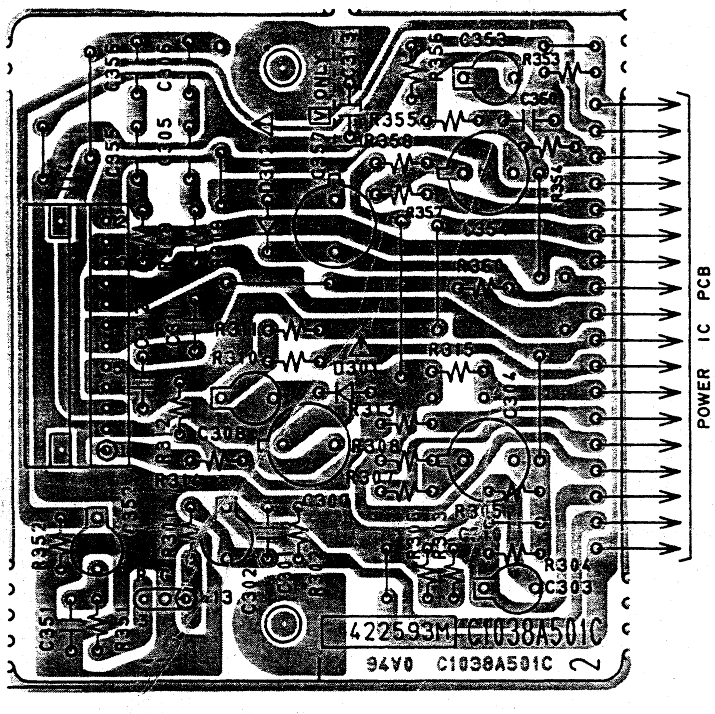
WARNING: ⚠ AND ▨ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSMENT: ⚠ ET ▨, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

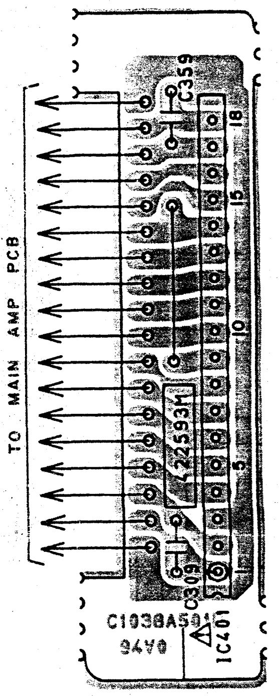
NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN µF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN µF/WV

INDICATED VOLTAGES WERE MEASURED WHEN NO SIGNAL WAS BEING INPUT.
(FUNCTION: CD STOP MODE)

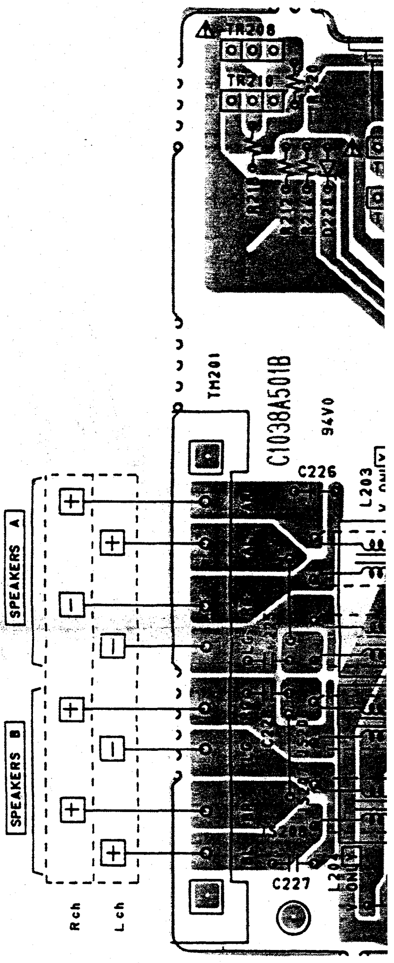
AX-890
MAIN
SCHEMATIC DIAGRAM
No.8-5 C103802M
A1

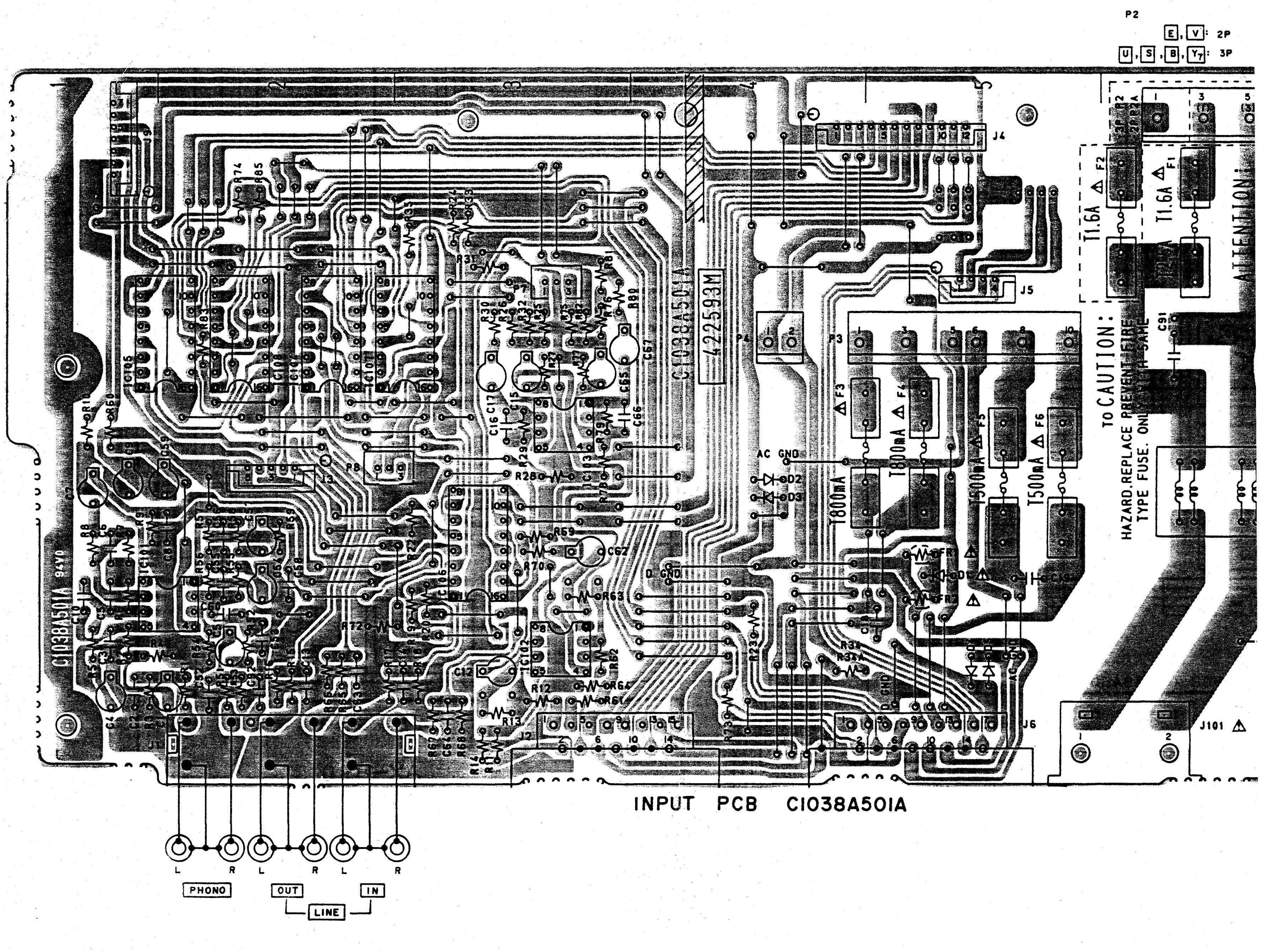

POWER IC PCB
422593M
C1038A501C
94V0
C1038A501C
2

MAIN AMP PCB C1038A501C

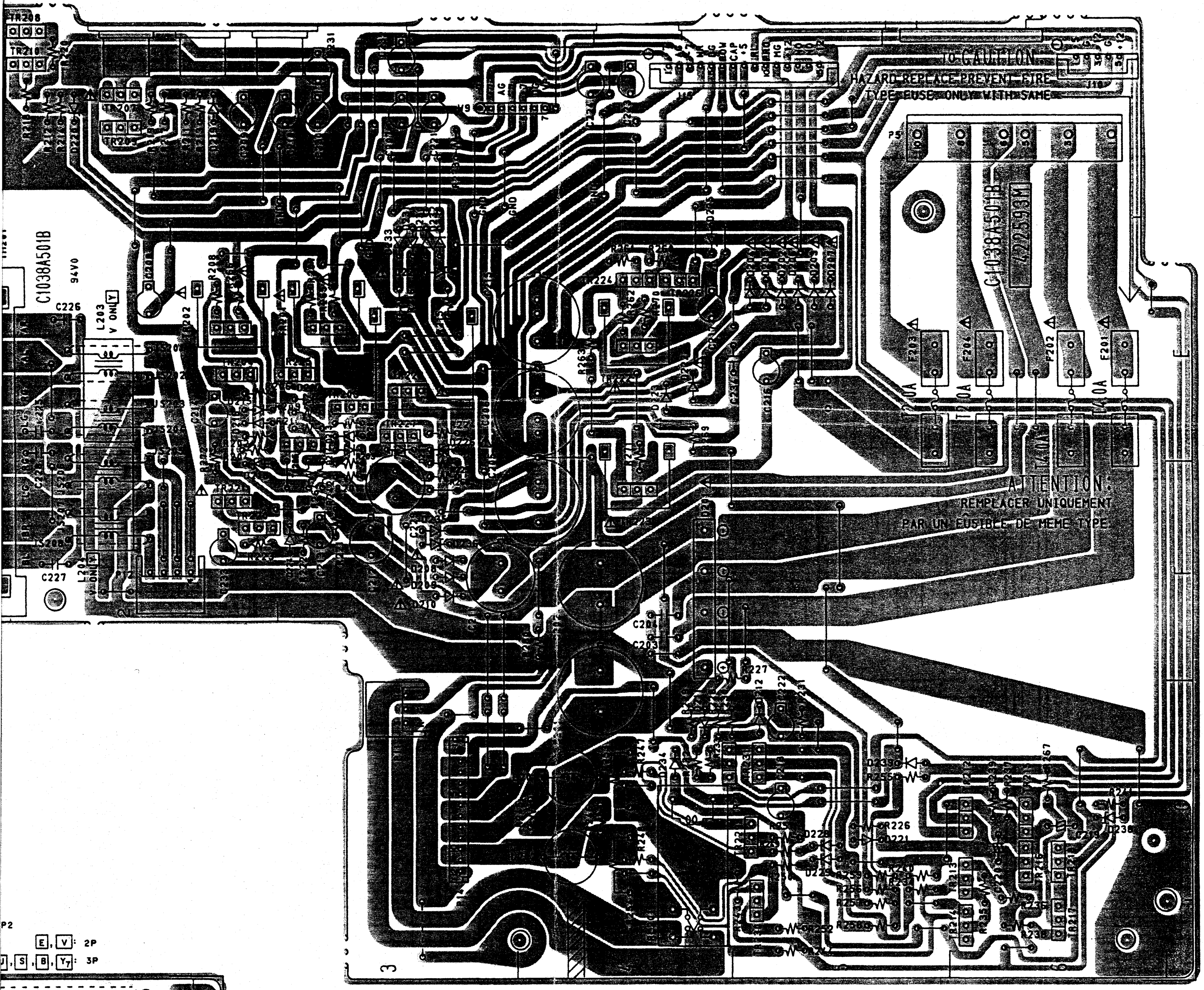

TO MAIN AMP PCB
422593M
C359
5
10
15
18
C1038A501
94V0
IC401

POWER IC PCB C1038A501D


SPEAKERS A
SPEAKERS B
Rch
Lch
TR208
TR210
TH201
C1038A501B
94V0
C226
C227
L203

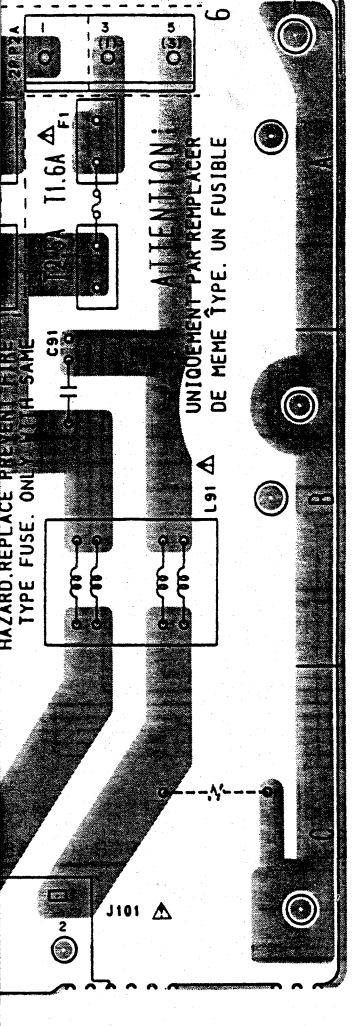

P2
E, V: 2P
U, S, B, Y: 3P
J4
J5
J6
J101
422593M
C1038A501A
C1038A501A 94V0
AC GND
D GND
T800mA F3
T800mA F4
T500mA F5
T500mA F6
T1.6A F2
T1.6A F1
C91
TO CAUTION:
HAZARD. REPLACE PREVENT FIRE
TYPE FUSE. ONLY WITH SAME
ATTENTION:
L
R
L
R
L
R
PHONO
OUT
LINE
IN

INPUT PCB C1038A501A



C1038A501B
94V0
L203
V ONLY
C226
C227
CAUTION:
HAZARD.REPLACE PREVENT FIRE
TYPE FUSE. ONLY WITH SAME
P5
C1038A501B
422598M
F203
F204
F202
F201
T20A
T40A
ATTENTION:
REMPLACER UNIQUEMENT
PAR UN FUSIBLE DE MEME TYPE.
AG
GND
W9
3

POWER SUPPLY PCB C1038A501B



P2
E, V: 2P
J, S, B, Y7: 3P
T1.6A
F1
C91
ATTENTION:
UNIQUEMENT PAR REMPLACER
DE MEME TYPE. UN FUSIBLE
HAZARD.REPLACE PREVENT FIRE
TYPE FUSE. ONLY WITH SAME
L91
J101
6

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY.
REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S
RECOMMENDED PARTS
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ.
POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL,
NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.
REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT
PARTS INFORMATION.

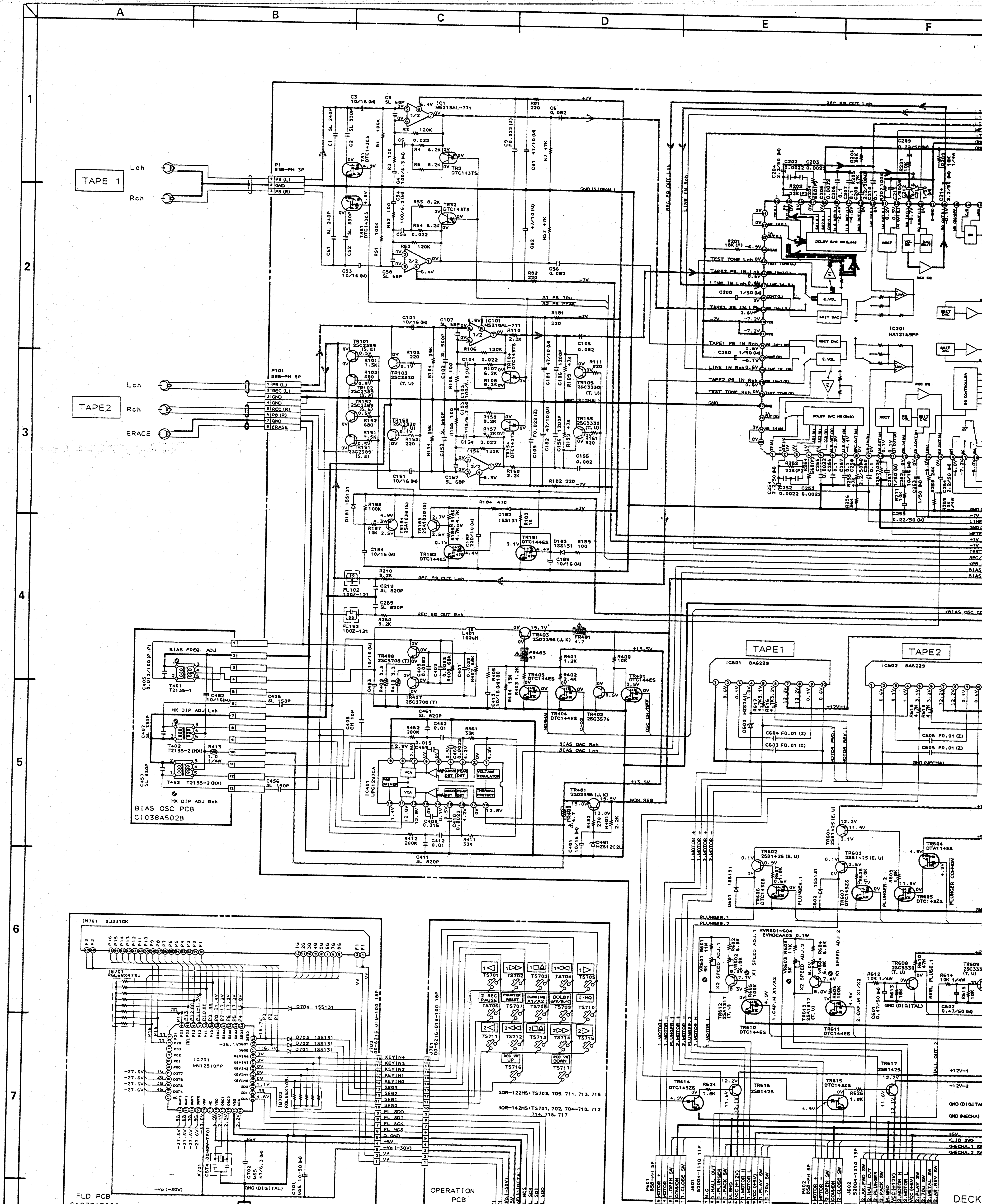
PRINCIPAL PARTS LOCATION

CONNECTORs

J10	D6
J15	D4,5
P5	D6
P11	G3
P12	F2
P14	G3
W9	D3,4

TRANSISTORs

TR201	E3
TR202	E2
TR203	E3
TR204	E2
TR205	E3
TR206	E3
TR207	D2
TR208	D2
TR209	D2
TR210	D2
TR211	G4,5
TR212	G6
TR213	G6
TR214	G6
TR215	G6
TR216	G6
TR217	G6
TR218	G6
TR220	F2
TR221	F2
TR222	E4
TR223	F4
TR224	E4
TR226	E4
TR227	E3
TR228	E3
TR229	G5
TR230	G5
TR231	G5


TAPE 1
Lch
Rch
TAPE2
ERACE
P1 B3B-PH 3P
P101 B8B-PH 8P
IC1 M5218AL-771
IC101 M5218AL-771
IC201 HA12169FP
BIAS OSC PCB
C1038A502B
BIAS FREQ. ADJ
HX DIP ADJ Lch
HX DIP ADJ Rch
IC401 UPC1297CA
REC EQ OUT Lch
REC EQ OUT Rch
LINE IN Rch
TAPE1
TAPE2
IC601 BA6229
IC602 BA6229
IN701 BJ231GK
IC701 MN12510FP
FLD PCB
C1038A502C
SHIELD. FLD. PLATE
J702 00-6216-018-100 18P
J701 00-6216-018-100 18P
OPERATION
PCB
C1038A502D
W701 04-260-ZON-DON
SOR-122HS: TS703, 705, 711, 713, 715
SOR-142HS: TS701, 702, 704-710, 712, 714, 716, 717
P601 B5B-PH 5P
J601 S2004-1110 11P
P602 B5B-PH 5P
J602 S2004-1310 13P
DECK
18

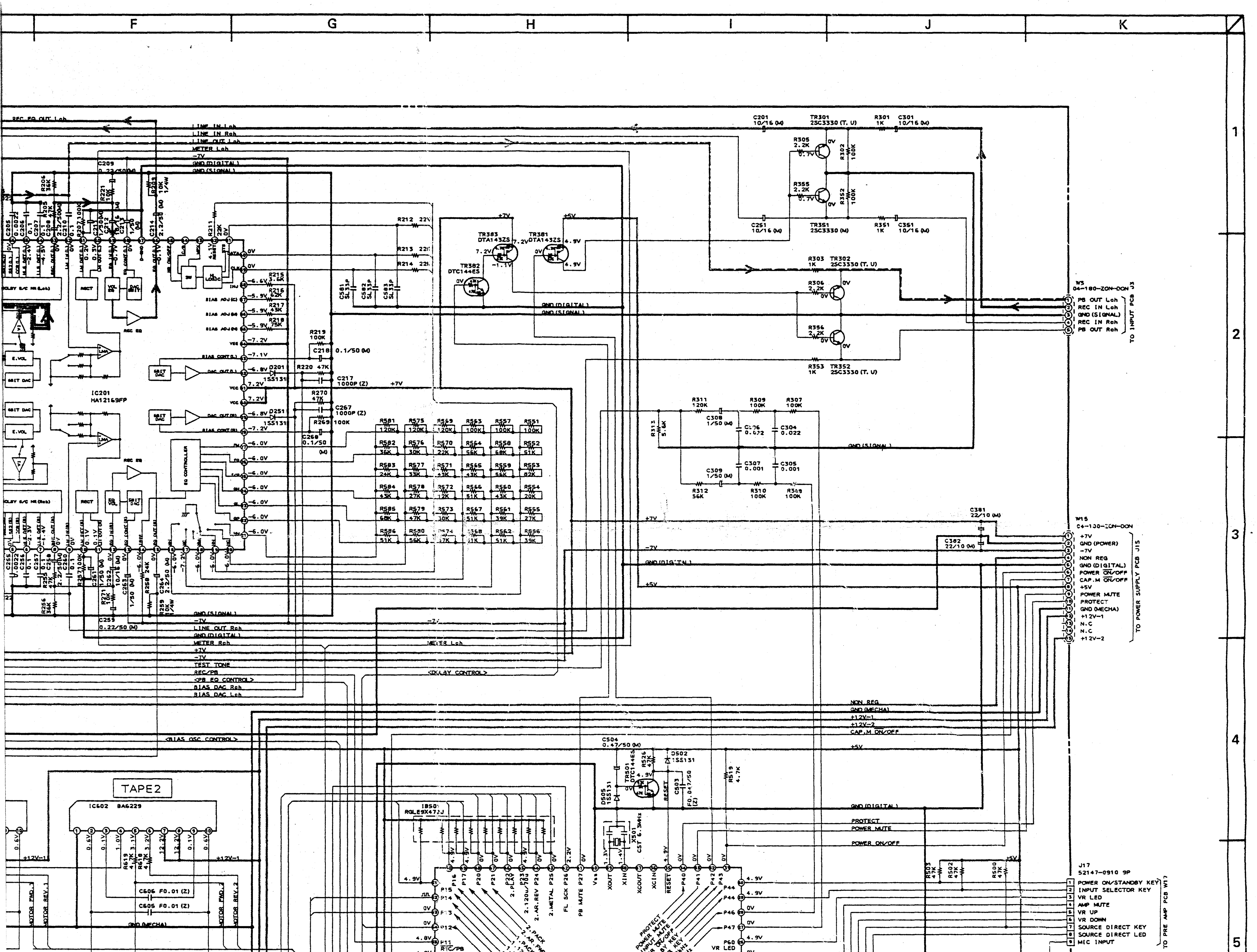
B (POWER SUPPLY) LINE
PB SIGNAL LINE
REC SIGNAL LINE

INDICATED VOLTAGES WERE MEASURED DURING PB MODE
(CONDITION: TAPE Ⅱ, FWD PLAY, NORMAL TAPE, DOLBY OFF)

WARNING: ⚠ AND ▨ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSMENT: ⚠ ET ▨. ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

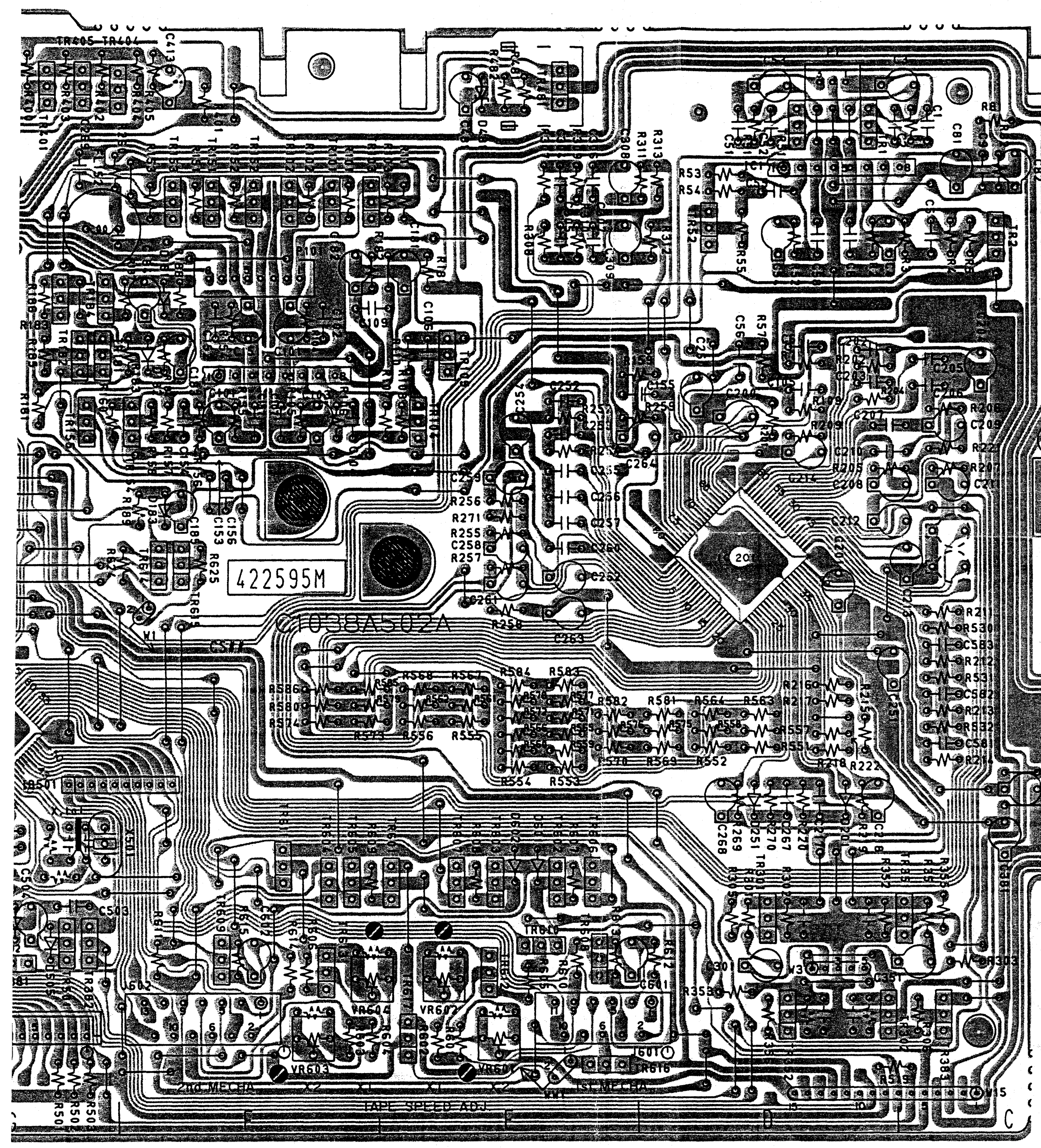
NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W (J)
ALL CAPACITORS IN μF/50V (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV
ALL INDUCTORS IN μH (J)



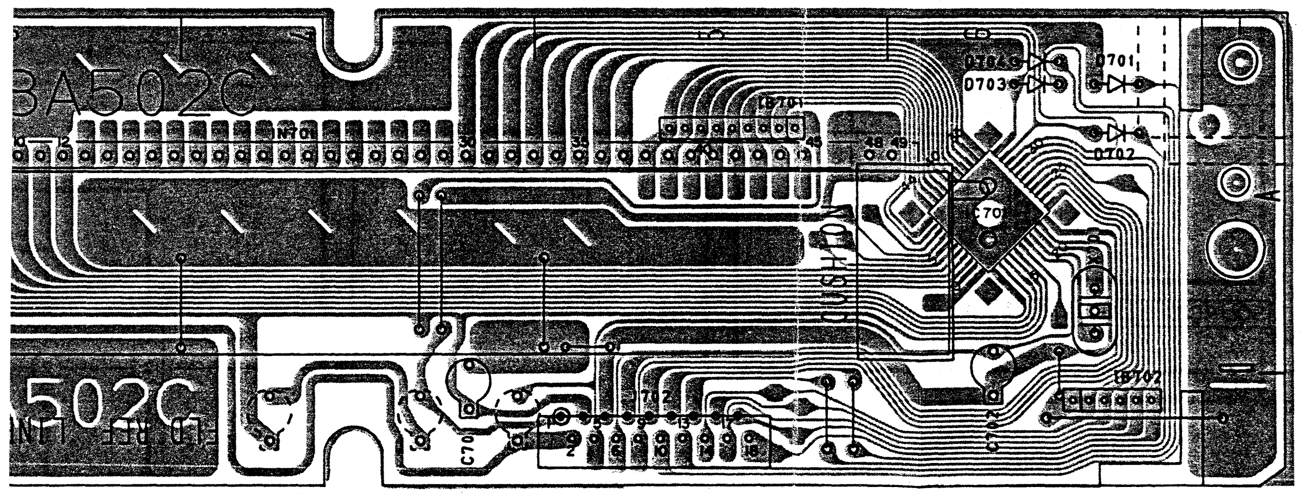
DECK PCB C1038A502A
TAPE2
IC501
M38184M8-135FP RX1DECK1
IC502
HD74LS05P
IC503
ST24C01B1
IC602 BA6229
IC201
HA12169FP
EQ CONTROLLER
J22
52147-0910 9P
J17
52147-0910 9P
J602
52004-1310 13P
W3
04-180-ZON-DON
TO INPUT PCB J3
W15
04-130-ZON-DON
TO POWER SUPPLY PCB J15
TO PRE AMP PCB W17
W4
04-140-ZON-DON
TO INPUT PCB J4
W5
04-160-ZON-DON
TO INPUT PCB J5
PB OUT Lch
REC IN Lch
GND (SIGNAL)
REC IN Rch
PB OUT Rch
+7V
GND (POWER)
-7V
NON REG
GND (DIGITAL)
POWER ON/OFF
CAP.M ON/OFF
+5V
POWER MUTE
PROTECT
GND (MECHA)
+12V-1
N.C
N.C
+12V-2
POWER ON/STANDBY KEY
INPUT SELECTOR KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURCE DIRECT KEY
SOURCE DIRECT LED
MIC INPUT
-Vp (-30V)
VF
VF
OUTPUT SW C
OUTPUT SW B
OUTPUT SW A
INPUT SW B
INPUT SW A
TC DATA IN
TC DATA OUT
TC CLK
TC BUSY
MIC ON
EA DATA OUT
EA CLK
EA BUSY
FL SDO
FL SDI
FL SCK
FL NCS
D.GND
+5V
-Vp (-30V)
Vf
Vf

AX-890
DECK
SCHEMATIC DIAGRAM
No.8-6 C103803M

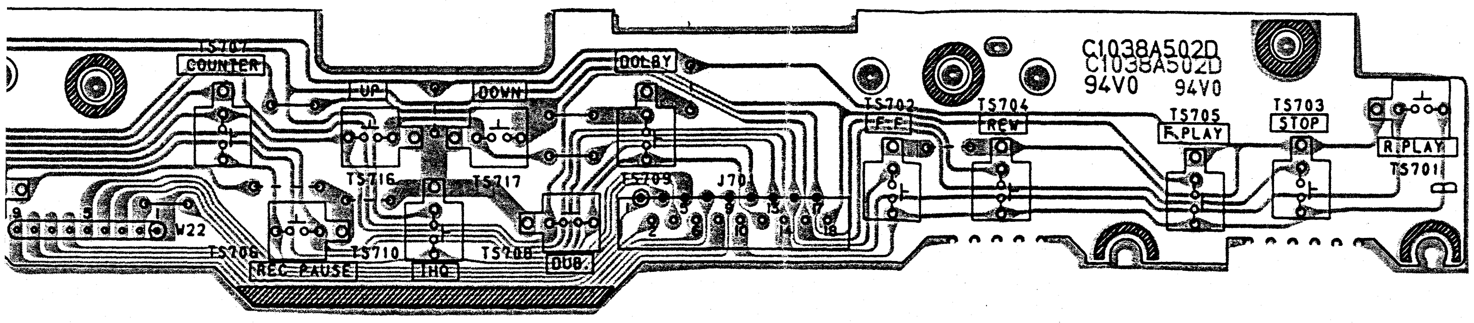
A1


422595M
C1038A502A
TAPE SPEED ADJ
2nd MECHA
1st MECHA
VR603
VR604
VR602
VR601

DECK PCB C1038A502A


D701
D702
D703
D704

FLD PCB C1038A502C


C1038A502D
C1038A502D
94V0 94V0
COUNTER
UP
DOWN
DOLBY
TS702
F.F
TS704
REW
TS705
F.PLAY
TS703
STOP
R.PLAY
TS701
TS716
TS717
TS709
J701
W22
TS706
REC PAUSE
TS710
THQ
TS708
DUB.
TS707

OPERATION PCB C1038A502D

PRINCIPAL PARTS LOCATION

ICs

IC1	D3
IC101	F4
IC201	D4,5
IC401	H3
IC501	G5
IC502	H6
IC503	H5
IC601	G4
IC602	G4

TRANSISTORs

TR1	D3
TR2	C3
TR51	D3
TR52	D3
TR101	F3
TR102	F3
TR103	F3
TR104	E4
TR105	E4
TR151	F3
TR152	F3
TR153	F3
TR154	F4
TR155	G4
TR181	G4
TR182	G4
TR183	G3
TR184	G3
TR301	D6
TR302	D6
TR351	C6
TR352	D6
TR381	G6
TR382	G6
TR383	C6
TR401	G3
TR402	G3
TR403	G3
TR404	F3
TR405	G3
TR407	H3
TR408	H3
TR481	E3
TR501	G6
TR503	H5
TR504	H5,6
TR505	H5,6
TR506	H6
TR508	H5
TR601	E6
TR602	E6
TR603	E6
TR604	F6
TR605	F6
TR606	E6
TR607	E6
TR608	E6
TR609	F6
TR610	E6
TR611	F6
TR612	E6
TR613	F6
TR614	F4,5
TR615	F4,5
TR616	E6
TR617	E6

CONNECTORs

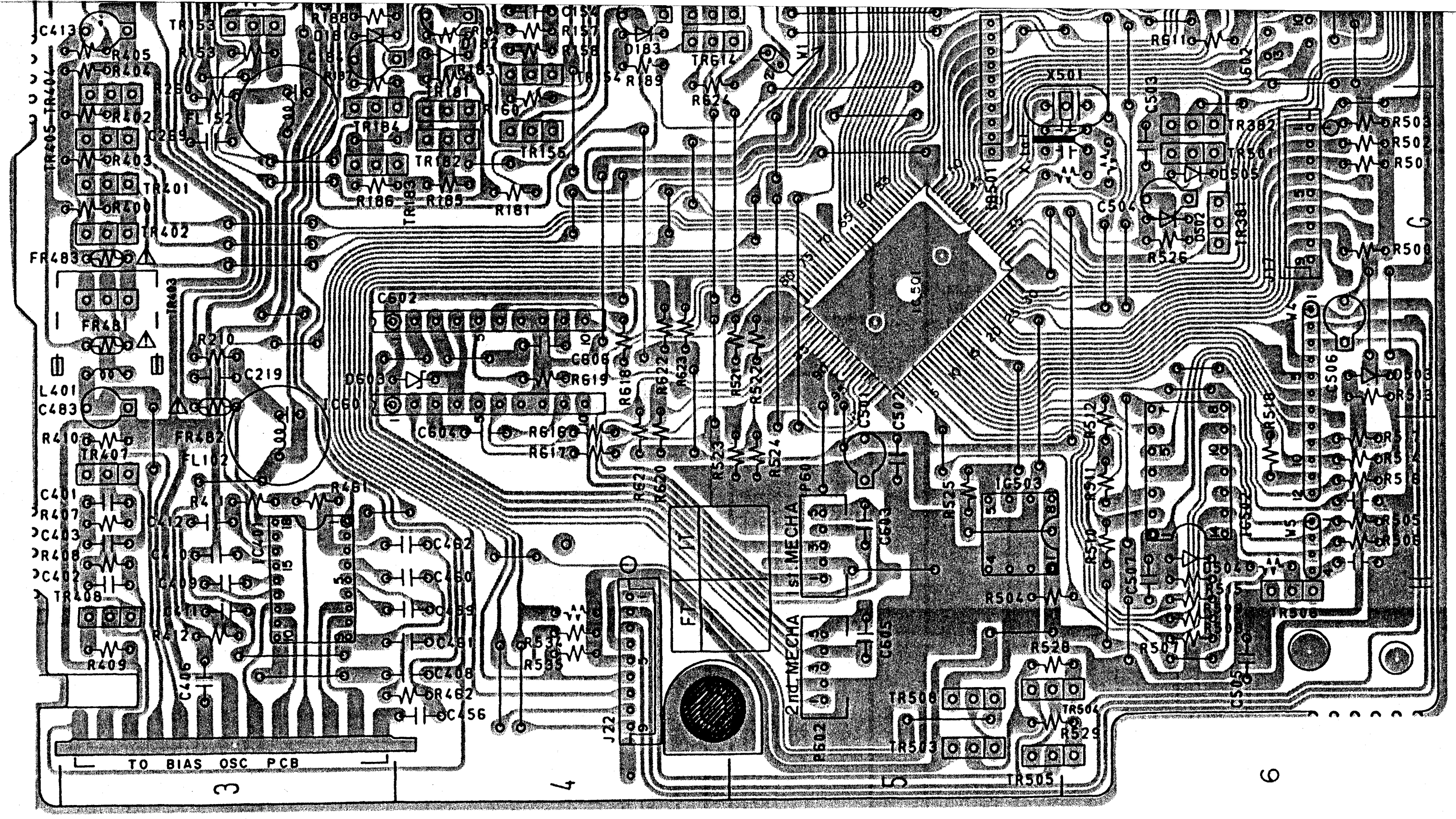
J17	G6
J22	H4
J601	E6
J602	F6
P1	D3
P101	F3
P601	H5
P602	H5

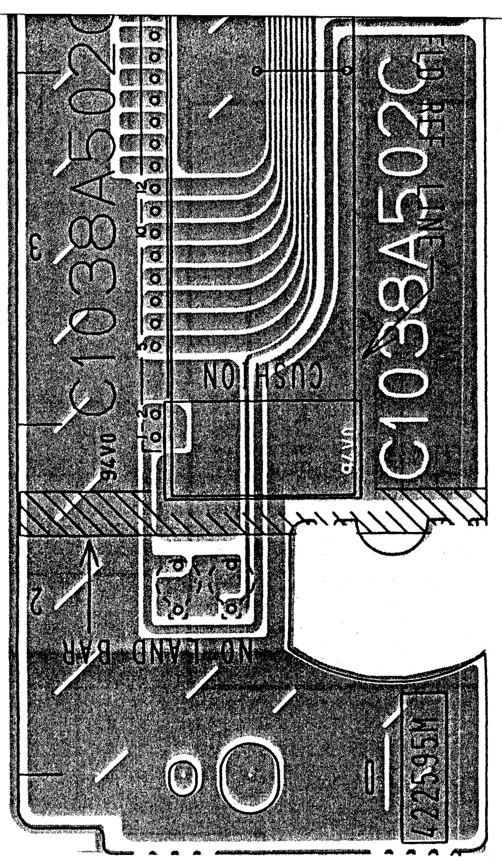
WIREs

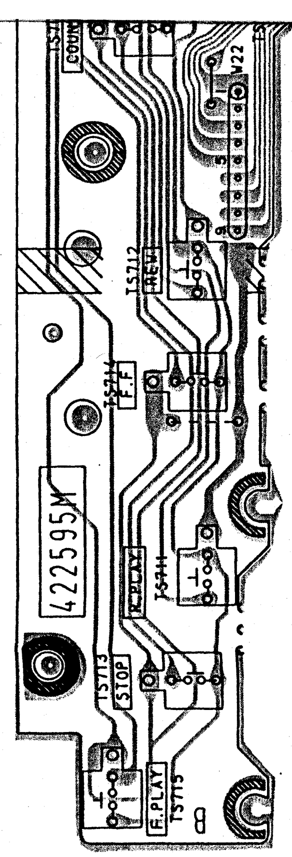
W3	D6
W4	H,G6
W5	H6
W15	C,D6

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY.
REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

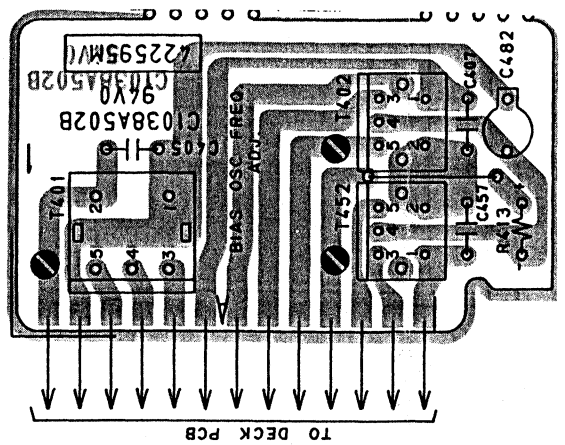
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ.
POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL,
NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT


TO BIAS OSC PCB
3
4
5
6
IC501
IC503
IC601
X501
J22
MECHA
2nd MECHA

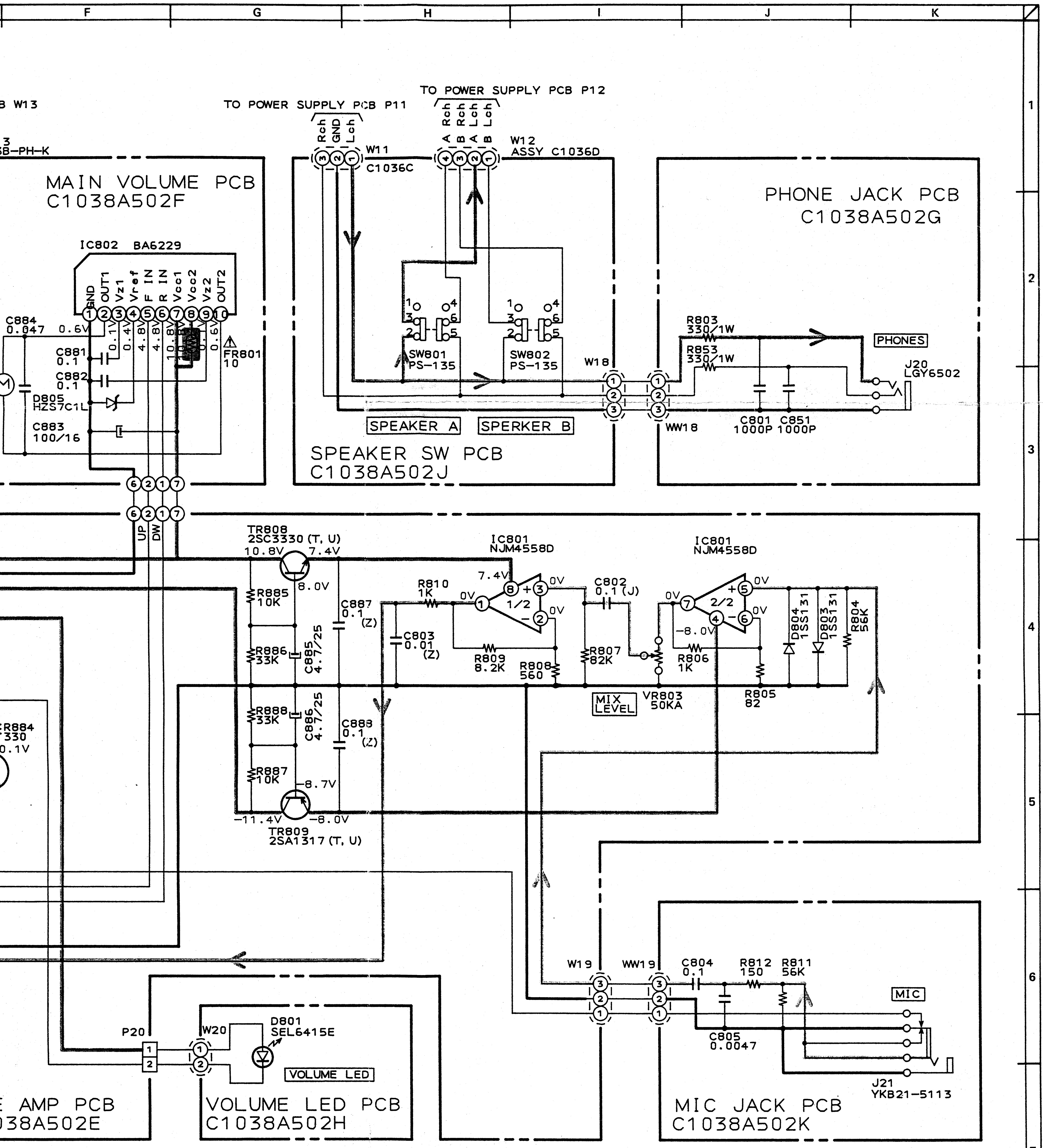

C1038A502C
94V0
CUSHION
NO LAND BAR
422595M
2
3


422595M
F.F
REW
R.PLAY
STOP
F.PLAY
B

OP


422595MV
C1038A502B
94V0
C482
C405
T401
T402
BIAS OSC FREQ ADJ
TO DECK PCB

BIAS OSC PCB C1038A502B



F
G
H
I
J
K
1
2
3
4
5
6
7
8
B W13
3
B-PH-K
TO POWER SUPPLY PCB P11
Rch
GND
Lch
W11
C1036C
TO POWER SUPPLY PCB P12
A Rch
B Rch
A Lch
B Lch
W12
ASSY C1036D
MAIN VOLUME PCB
C1038A502F
IC802 BA6229
GND
OUT1
Vz1
Vref
F IN
R IN
Vcc1
Vcc2
Vz2
OUT2
C884
0.047
0.6V
0.1V
0.4V
4.8V
4.8V
10.8V
0.6V
C881
0.1
C882
0.1
D805
HZS7C1L
C883
100/16
FR801
10
R884
330
0.1V
UP
DW
SW801
PS-135
SW802
PS-135
SPEAKER A
SPERKER B
SPEAKER SW PCB
C1038A502J
W18
WW18
PHONE JACK PCB
C1038A502G
R803
330/1W
R853
330/1W
C801 C851
1000P 1000P
PHONES
J20
LGY6502
TR808
2SC3330 (T, U)
10.8V
7.4V
8.0V
R885
10K
R886
33K
R888
33K
R887
10K
C885
4.7/25
C886
4.7/25
C887
0.1
(Z)
C888
0.1
(Z)
-8.7V
-11.4V
-8.0V
TR809
2SA1317 (T, U)
IC801
NJM4558D
R810
1K
C803
0.01
(Z)
1/2
R809
8.2K
R808
560
C802
0.1 (J)
R807
82K
MIX LEVEL
VR803
50KA
IC801
NJM4558D
2/2
-8.0V
R806
1K
R805
82
D804
1SS131
D803
1SS131
R804
56K
0V
W19
WW19
C804
0.1
R812
150
R811
56K
C805
0.0047
MIC
J21
YKB21-5113
MIC JACK PCB
C1038A502K
P20
W20
D801
SEL6415E
VOLUME LED
VOLUME LED PCB
C1038A502H
E AMP PCB
38A502E

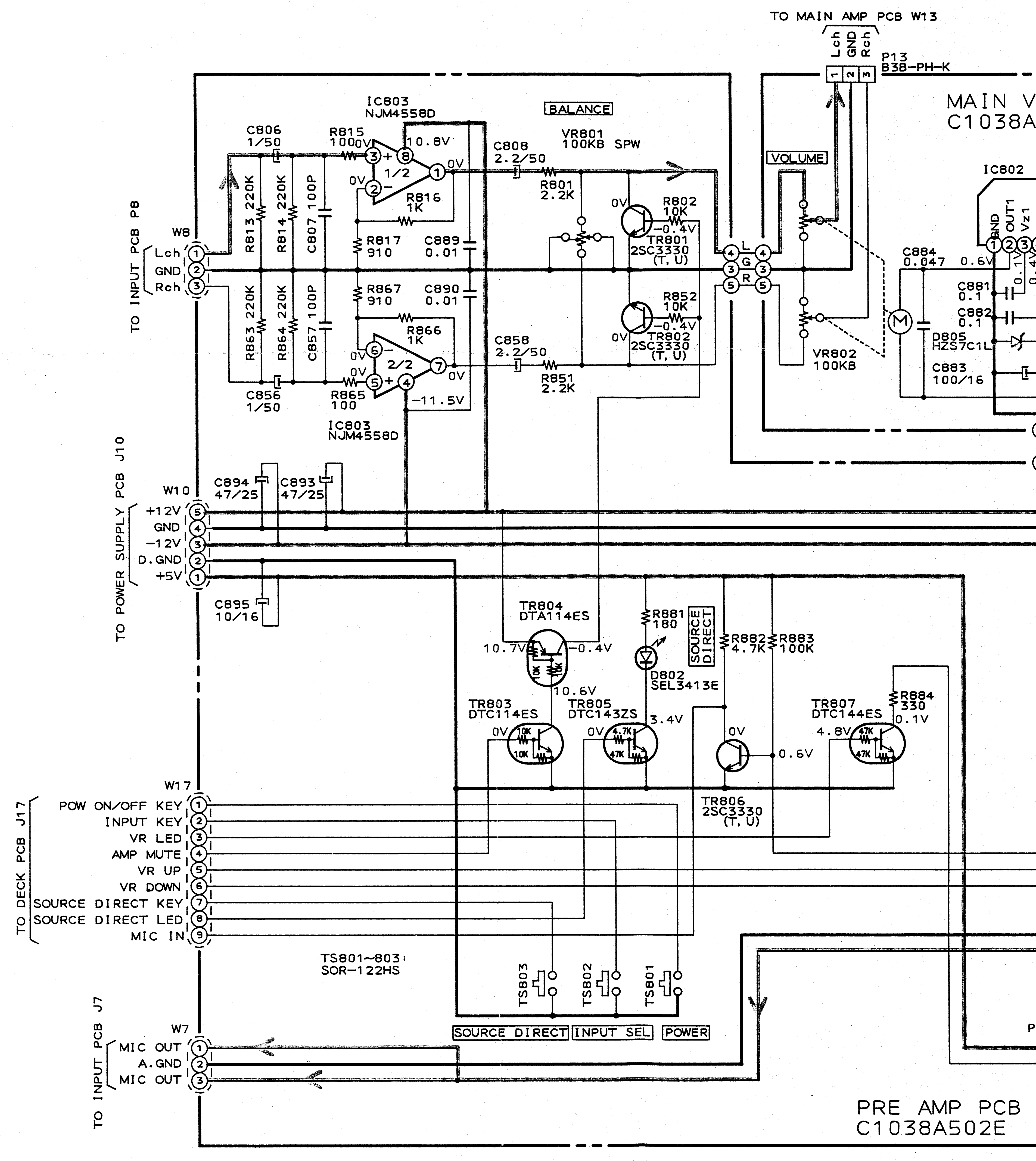
SAFETY CRITICAL
TINUED SAFETY,
TICAL COMPONENTS
RER' S RECOMMENDED

INDIQUENT LES
ES DE SÉCURITÉ,
EGRÉ DE SÉCURITÉ
MPLACER QUE DES
PAR LE FABRICANT

INDICATED VOLTAGES WERE MEASURED
WHEN NO SIGNAL WAS BEING INPUT.
(FUNCTION:CD STOP MODE)

━━ :B (POWER SUPPLY) LINE
━━ :Lch AUDIO SIGNAL LINE

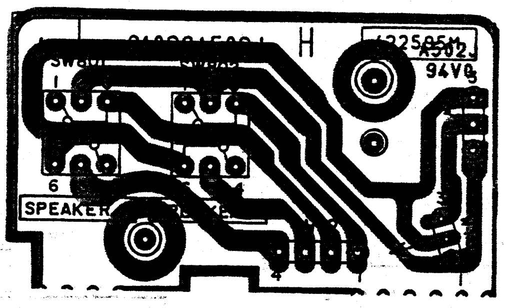
AX-890
PRE AMP & OTHER
SCHEMATIC DIAGRAMS
No.8-7 C103804M
A2


TO MAIN AMP PCB W13
Lch
GND
Rch
P13
B3B-PH-K
MAIN V
C1038A
IC803
NJM4558D
BALANCE
VR801
100KB SPW
C806
1/50
R815
100
0V
10.8V
1/2
R816
1K
C808
2.2/50
R801
2.2K
R802
10K
-0.4V
TR801
2SC3330
(T, U)
VOLUME
IC802
GND
OUT1
Vz1
W8
Lch
GND
Rch
TO INPUT PCB P8
R813 220K
R814 220K
C807 100P
R817
910
C889
0.01
L
G
R
C884
0.047
0.6V
C881
0.1
C882
0.1
D805
HZS7C1L
C883
100/16
R863 220K
R864 220K
C857 100P
R867
910
C890
0.01
R866
1K
2/2
C858
2.2/50
R851
2.2K
R852
10K
TR802
2SC3330
(T, U)
VR802
100KB
C856
1/50
R865
100
-11.5V
IC803
NJM4558D
TO POWER SUPPLY PCB J10
W10
+12V
GND
-12V
D.GND
+5V
C894
47/25
C893
47/25
C895
10/16
TR804
DTA114ES
10.7V
-0.4V
10.6V
R881
180
SOURCE
DIRECT
D802
SEL3413E
R882
4.7K
R883
100K
TR803
DTC114ES
TR805
DTC143ZS
3.4V
TR807
DTC144ES
R884
330
0.1V
4.8V
0.6V
TR806
2SC3330
(T, U)
TO DECK PCB J17
W17
POW ON/OFF KEY
INPUT KEY
VR LED
AMP MUTE
VR UP
VR DOWN
SOURCE DIRECT KEY
SOURCE DIRECT LED
MIC IN
TS801~803:
SOR-122HS
TS803
TS802
TS801
SOURCE DIRECT
INPUT SEL
POWER
TO INPUT PCB J7
W7
MIC OUT
A.GND
MIC OUT
PRE AMP PCB
C1038A502E

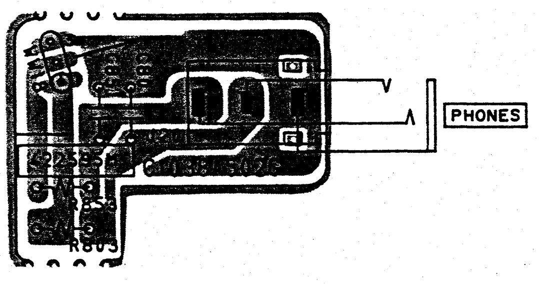
NOTE;
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV (M)

WARNING: ⚠ AND ▨ INDICATE SAFETY CRITICAL
COMPONENTS FOR CONTINUED SAFETY,
REPLACE SAFETY CRITICAL COMPONENTS
ONLY WITH MANUFACTURER'S RECOMMENDE
PARTS

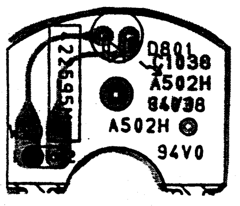
AVERTISSMENT: ⚠ ET ▨, ILS INDIQUENT LES
COMPOSTANTS CRITIQUES DE SÉCURITÉ,
POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ
DE L'APPAREIL, NE REMPLACER QUE DES
PIÈCES RECOMMANDEES PAR LE FABRICAN


H
22595M
A502J
94V0
6
SPEAKER

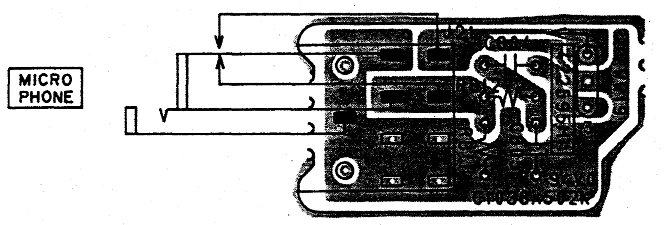
SPEAKER SW PCB CI038A502J


PHONES
R803

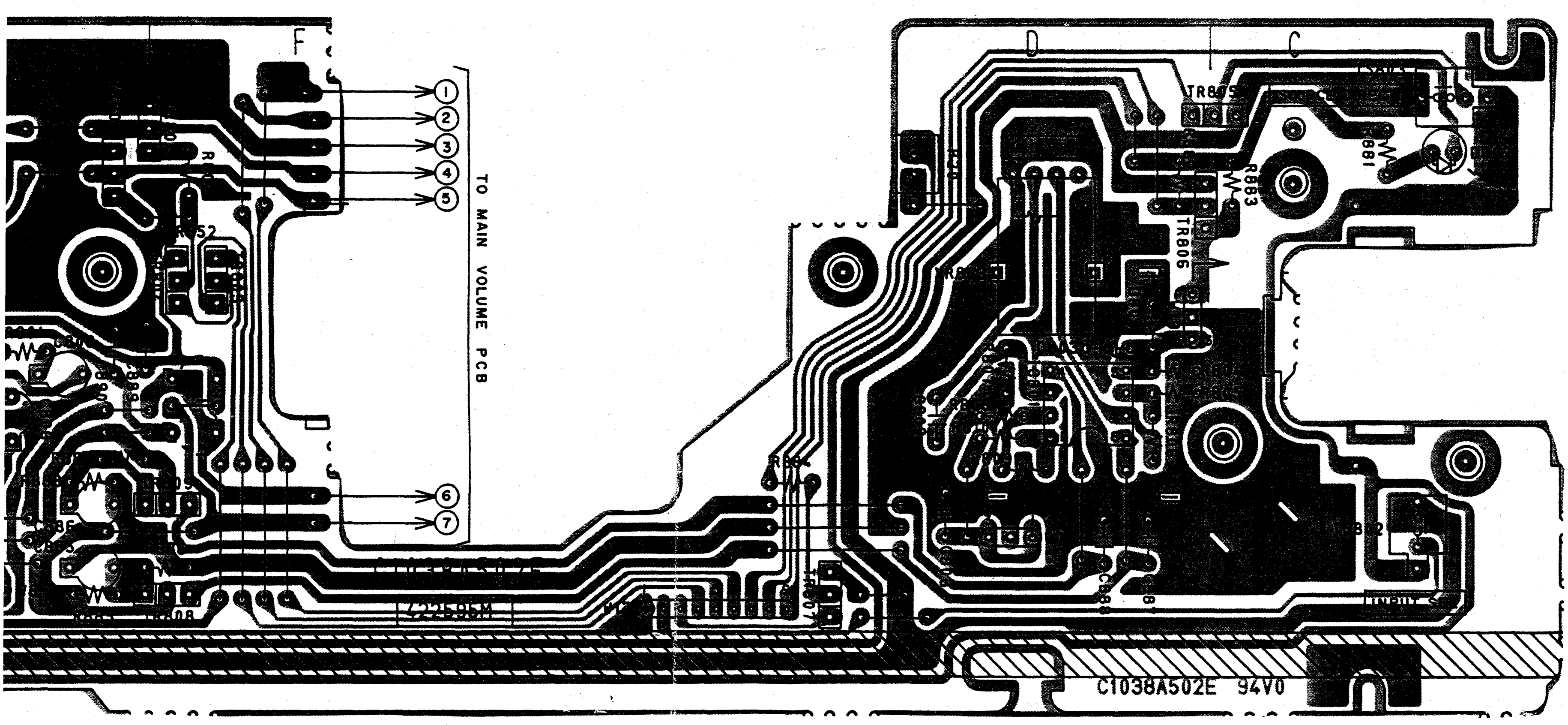
PHONE JACK PCB CI038A502G


D801
C1038
A502H
94V0
A502H
94V0
22595M

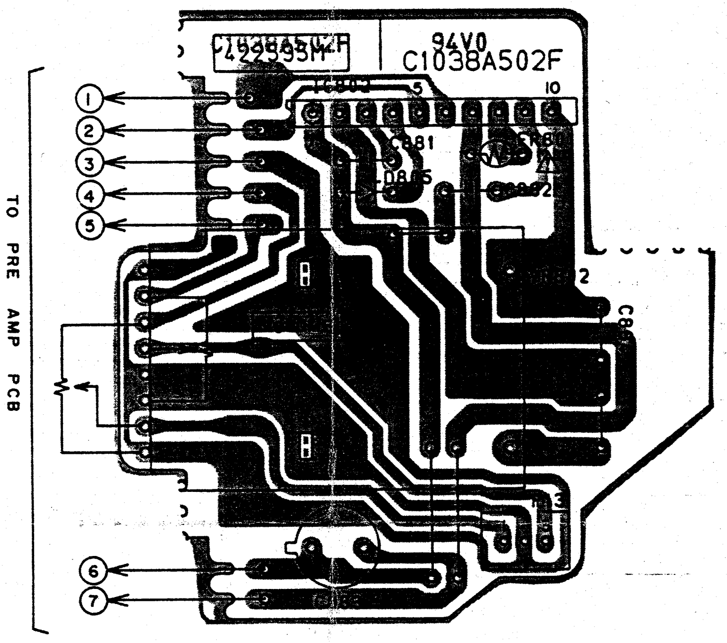
VOLUME LED PCB
CI038A502H


MICRO PHONE

MIC JACK PCB CI038A502K


F
D
C
①
②
③
④
⑤
TO MAIN VOLUME PCB
⑥
⑦
TR805
R883
R881
TR806
C1038A502E 94V0
22595M

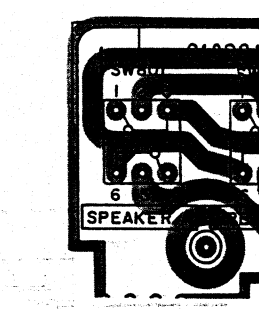
PRE AMP PCB CI038A502E


422595M
94V0
C1038A502F
IC802
5
10
C881
D885
R80
C882
2
C8
3
①
②
③
④
⑤
⑥
⑦
TO PRE AMP PCB

MAIN VOLUME PCB CI038A502F

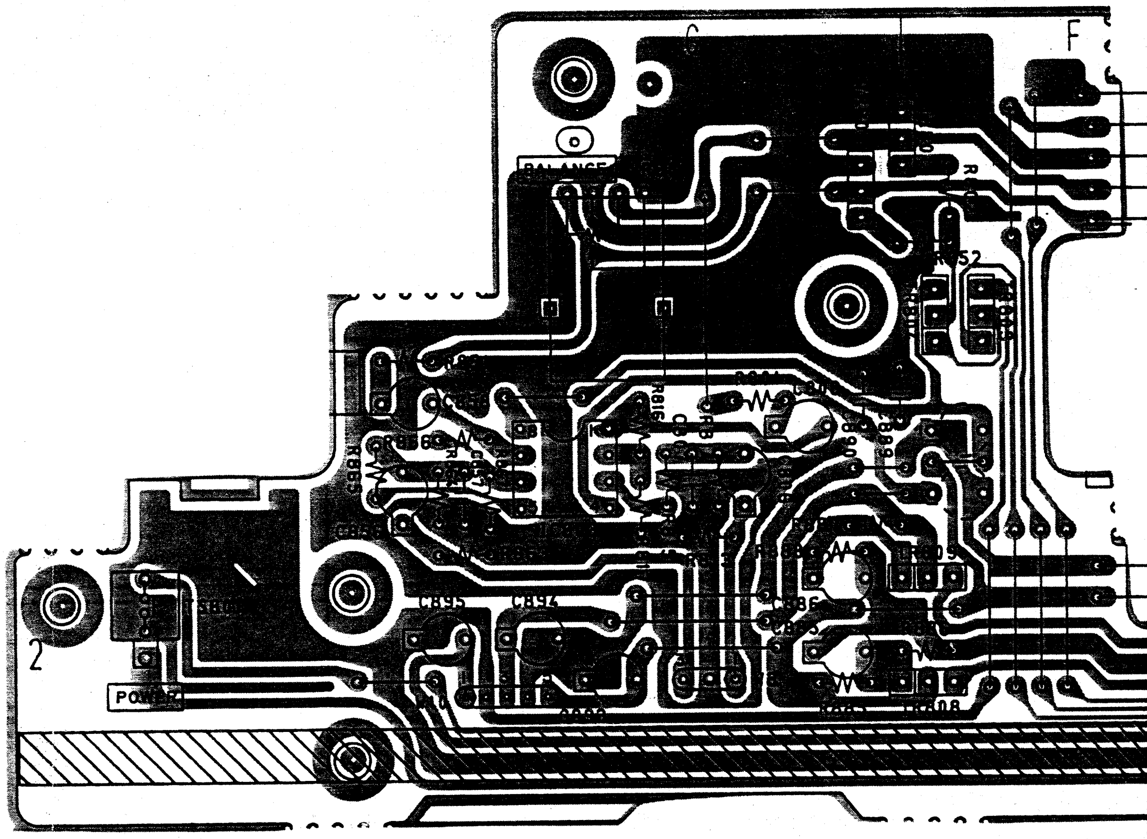
WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

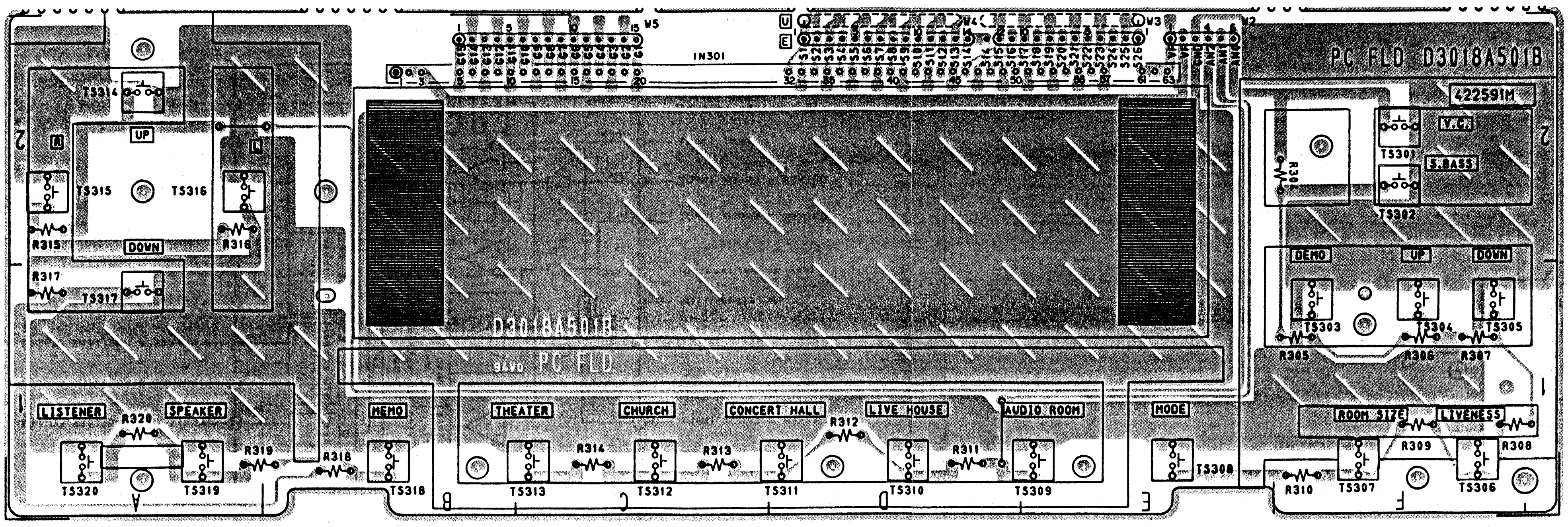

SW801
1
6
SPEAKER

SPEAKER SW

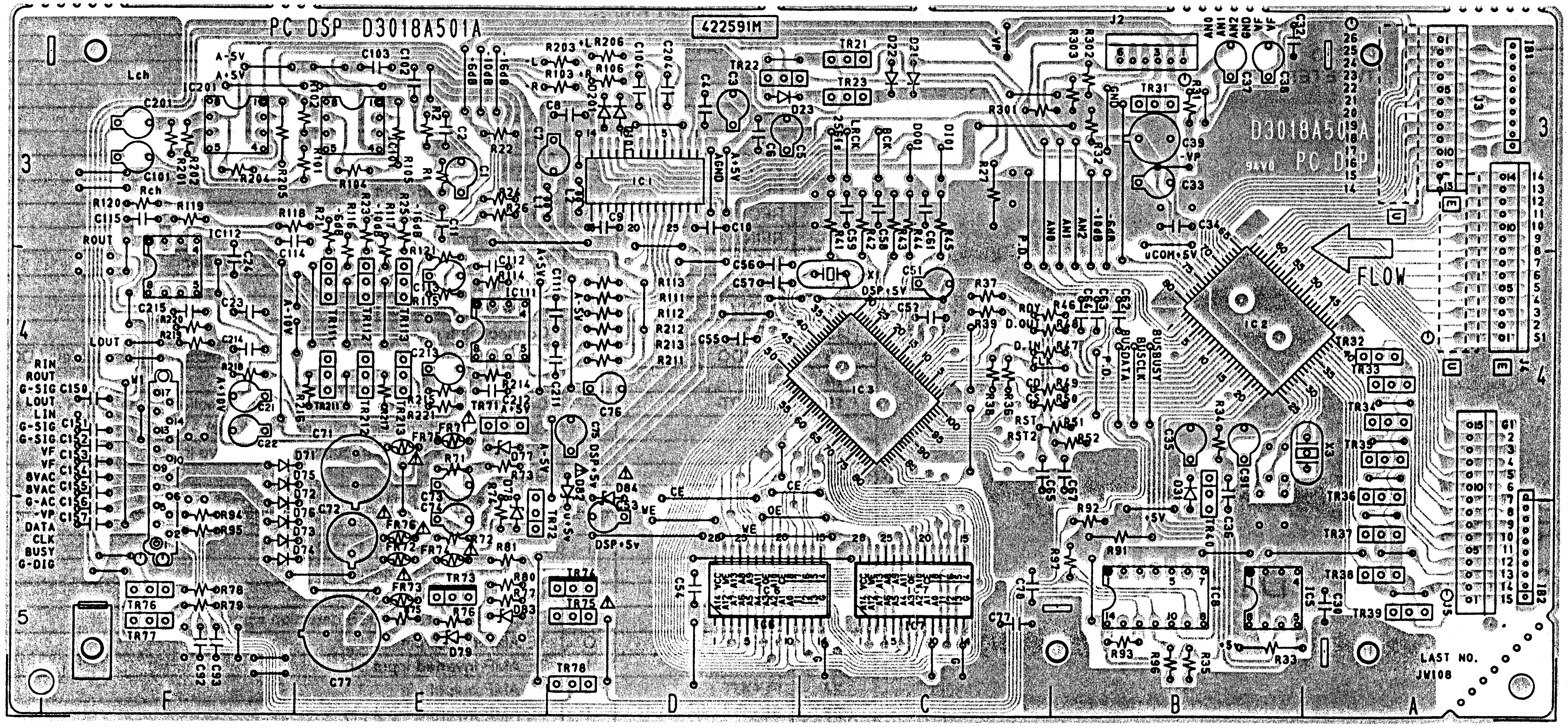
VOLUM
CI038


F
C
BALANCE
R852
R816
C895
C894
POWER
2

PRE AMP PC


PC FLD D3018A501B
42259IM
W5
IN301
W3
W2
TS314
UP
TS315
TS316
R315
DOWN
R316
R317
TS317
D3018A501B
PC FLD
V.C.
TS301
S.BASS
TS302
DEMO
UP
DOWN
TS303
TS304
TS305
R305
R306
R307
LISTENER
R328
SPEAKER
MEMO
THEATER
CHURCH
CONCERT HALL
LIVE HOUSE
AUDIO ROOM
MODE
ROOM SIZE
LIVENESS
R312
R319
R318
R314
R313
R311
R309
R308
R310
TS320
TS319
TS318
TS313
TS312
TS311
TS310
TS309
TS308
TS307
TS306
A
B
C
D
E
F
1
2

FLD PCB D3018A501B


PC DSP D3018A501A
42259IM
Lch
Rch
ROUT
LOUT
RIN
ROUT
G-SIG
LOUT
LIN
G-SIG
G-SIG
VF
VF
8VAC
8VAC
G-AC
-VP
DATA
CLK
BUSY
G-DIG
IC1
IC2
IC3
IC5
IC6
IC7
IC8
IC101
IC111
IC112
TR21
TR22
TR23
TR31
TR32
TR33
TR34
TR35
TR36
TR37
TR38
TR39
TR72
TR73
TR74
TR75
TR76
TR77
TR78
J2
J3
J4
J5
W1
D3018A501A
PC DSP
FLOW
X1
X3
CE
OE
WE
DSP+5V
uCOM+5V
LAST NO.
JV108
A
B
C
D
E
F
3
4
5

DSP PCB D3018A501A

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

PRINCIPAL PARTS LOCATION

TRANSISTORs

TR21	C3
TR22	D3
TR23	C3
TR31	B3
TR32	A4
TR33	A4
TR34	A4
TR35	A4
TR36	A4,5
TR37	A5
TR38	A5
TR39	A5
TR40	B4,5
TR71	E4
TR72	E5
TR73	E5
TR74	D5
TR75	D5
TR76	F5
TR77	F5
TR78	D5
TR111	E4
TR112	E4
TR113	E4
TR211	E4
TR212	E4
TR213	E4

ICs

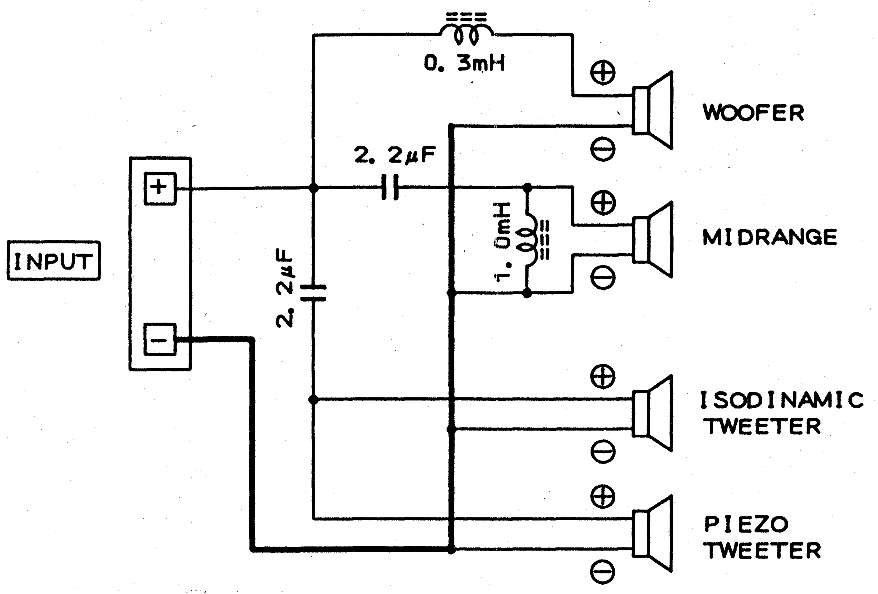
IC1	D3
IC2	B4
IC3	C4
IC5	B5
IC6	D5
IC7	C5
IC8	B5
IC101	E3
IC111	E4
IC112	F4
IC201	F3

CONNECTORs

J2	B3
J3	A3
J4	A3,4
J5	A4,5

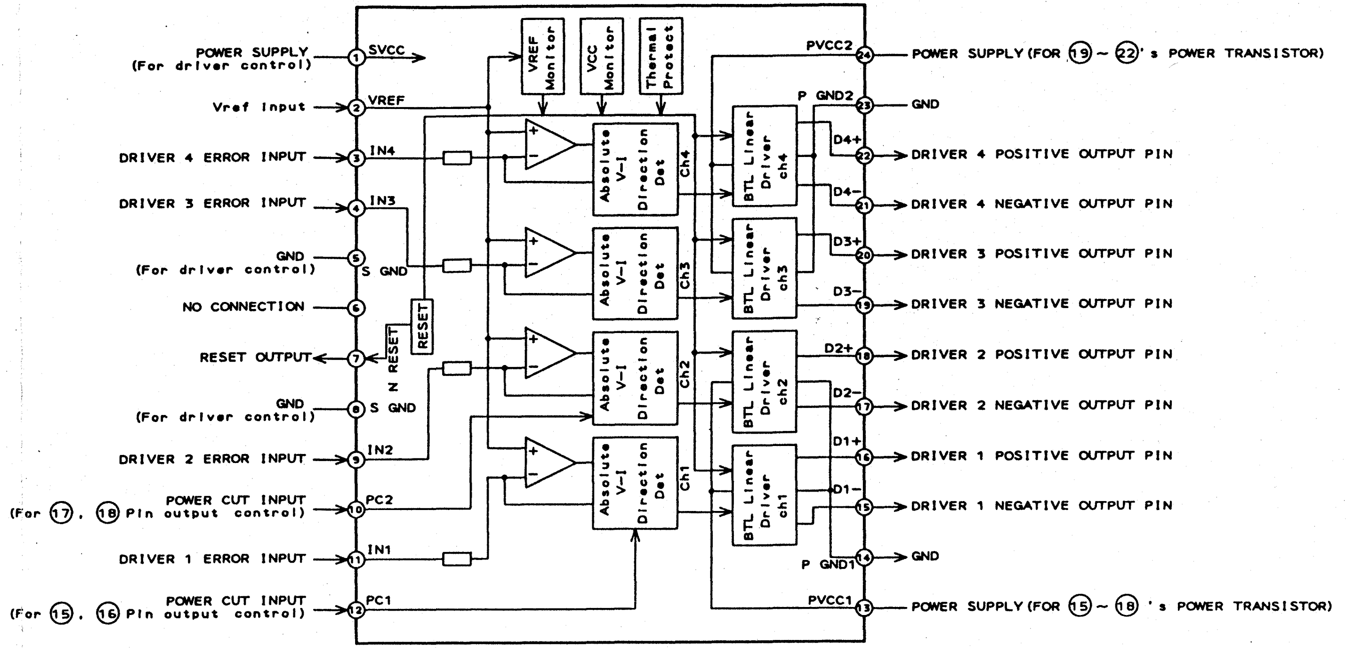
WIREs

W1	F4,5


0. 3mH
2. 2μF
2. 2μF
1. 0mH
INPUT
+
−
⊕
⊖
WOOFER
MIDRANGE
ISODINAMIC TWEETER
PIEZO TWEETER

SCHEMATIC DIAGRAMS

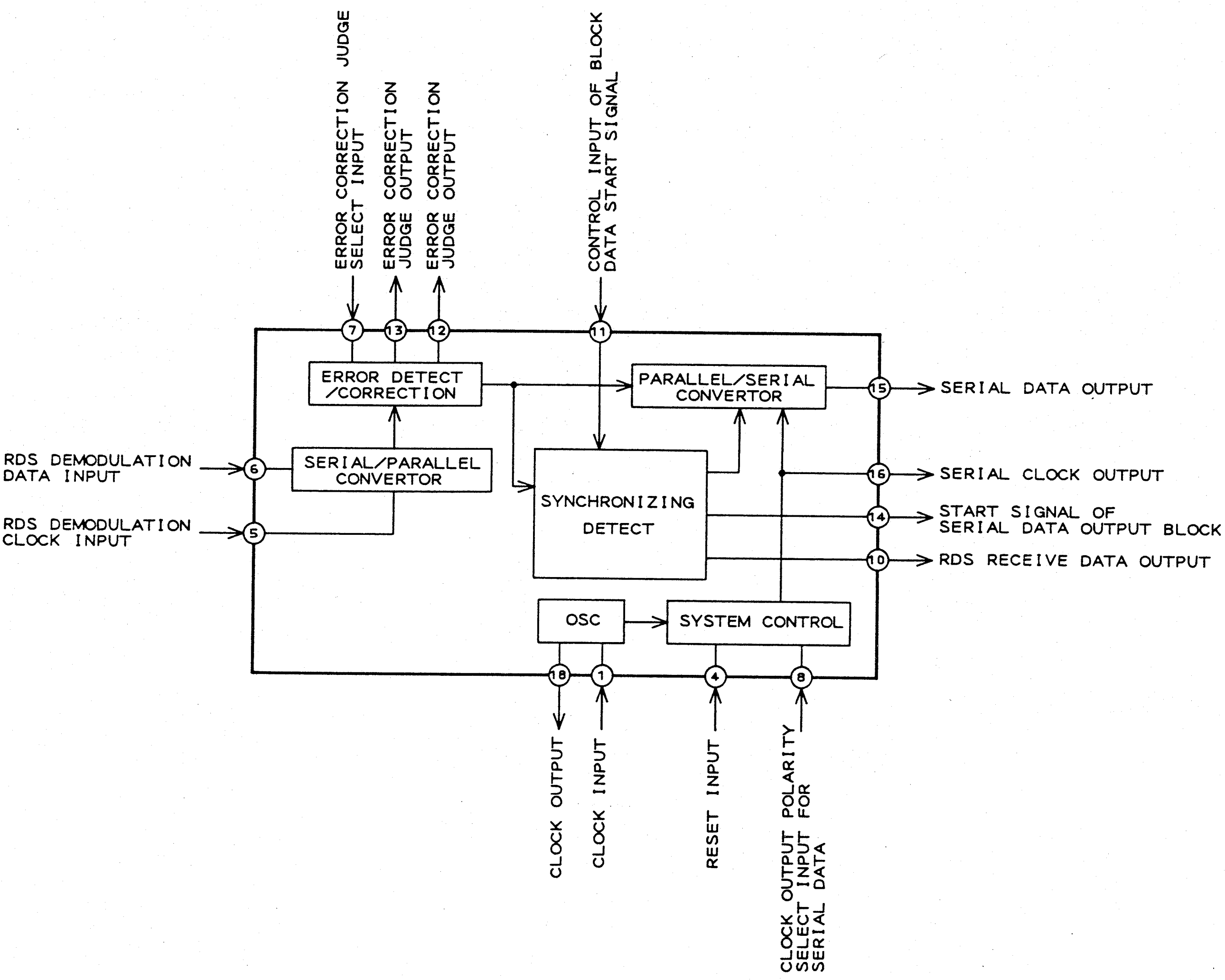
AN8389S (LINEAR MOTOR DRIVER)


POWER SUPPLY (For driver control)
Vref Input
DRIVER 4 ERROR INPUT
DRIVER 3 ERROR INPUT
GND (For driver control)
NO CONNECTION
RESET OUTPUT
GND (For driver control)
DRIVER 2 ERROR INPUT
(For ⑰, ⑱ Pin output control) POWER CUT INPUT
DRIVER 1 ERROR INPUT
(For ⑮, ⑯ Pin output control) POWER CUT INPUT
SVCC
VREF
IN4
IN3
S GND
RESET
N RESET
S GND
IN2
PC2
IN1
PC1
VREF Monitor
VCC Monitor
Thermal Protect
Absolute V-I Direction Det
Ch4
Ch3
Ch2
Ch1
BTL Linear Driver ch4
BTL Linear Driver ch3
BTL Linear Driver ch2
BTL Linear Driver ch1
PVCC2
P GND2
D4+
D4−
D3+
D3−
D2+
D2−
D1+
D1−
P GND1
PVCC1
POWER SUPPLY (FOR ⑲ ~ ㉒'s POWER TRANSISTOR)
GND
DRIVER 4 POSITIVE OUTPUT PIN
DRIVER 4 NEGATIVE OUTPUT PIN
DRIVER 3 POSITIVE OUTPUT PIN
DRIVER 3 NEGATIVE OUTPUT PIN
DRIVER 2 POSITIVE OUTPUT PIN
DRIVER 2 NEGATIVE OUTPUT PIN
DRIVER 1 POSITIVE OUTPUT PIN
DRIVER 1 NEGATIVE OUTPUT PIN
GND
POWER SUPPLY (FOR ⑮ ~ ⑱'s POWER TRANSISTOR)

AN8806SB (I-V/ERROR AMP)

Pin No.	PORT NAME	I/O	FUNCTION
1	PD	I	PD signal input for LD output monitor
2	LD	O	Connect to the external transistor's base for LD drive
3	LDON	I	LD APC on/off select input
4	LDP	I	APC reference voltage select input
5	VCC	–	Power supply
6	RF-	I	RF AMP inverted input pin
7	RFOUT	O	RF inverted amp output
8	RFIN	I	RF AGC input pin
9	C.AGC	–	Capacitor connecting pin for RF AGC loop filter
10	AR	O	RF output pin after AGC operation
11	C.ENV	–	Connecting capacitor for RF
12	C.EA	–	Connecting a capacitor for AMP
13	S.SBDO	–	Capacitor connecting pin for low speed detection of the dark level DO detection
14	BDO	O	BDO detection output pin (positive logic)
15	C.SBRT	–	Capacitor connecting pin for low speed detection of the OFTR detection
16	OFTR	O	Off track detection output pin (positive logic)
17	NRFDET	O	RF signal level detection output pin (negative logic)
18	GND	–	Ground
19	ENV	O	Envelope output pin
20	VREF	O	1/2 VCC output pin
21	LD OFF	I	Input pin of forced stop for LD APC
22	VDET	O	Vibration detection output pin
23	TEBPF	I	Vibration detection input pin
24	CROSS	O	Output pin for TE CROSS detection signal
25	TEOUT	O	TE AMP output pin
26	TE-	I	TE AMP inverted input pin
27	FEOUT	O	FE AMP output pin
28	FE-	I	FE AMP inverted input pin
29	FBAL	I	Control signal input pin for FO balance adjustment
30	TBAL	I	Control signal input pin for TE balance adjustment
31	PDFR	–	Resistor connection pin for setting I-V conversion resistance value of PDE
32	PDER	–	Resistor connection pin for setting I-V conversion resistance value of PDF
33	PDE	I	Connect to pin diode E
34	PDF	I	Connect to pin diode F
35	PDBD	I	Connect to B,D of 4 separation astigmatic PD
36	PDAC	I	Connect to B,D of 4 separation astigmatic PD

LC7073M (RDS DATA PROCESS)



ERROR CORRECTION JUDGE SELECT INPUT
ERROR CORRECTION JUDGE OUTPUT
ERROR CORRECTION JUDGE OUTPUT
CONTROL INPUT OF BLOCK DATA START SIGNAL
7
13
12
11
ERROR DETECT /CORRECTION
PARALLEL/SERIAL CONVERTOR
15
SERIAL DATA OUTPUT
RDS DEMODULATION DATA INPUT
6
SERIAL/PARALLEL CONVERTOR
SYNCHRONIZING DETECT
16
SERIAL CLOCK OUTPUT
14
START SIGNAL OF SERIAL DATA OUTPUT BLOCK
RDS DEMODULATION CLOCK INPUT
5
10
RDS RECEIVE DATA OUTPUT
OSC
SYSTEM CONTROL
18
1
4
8
CLOCK OUTPUT
CLOCK INPUT
RESET INPUT
CLOCK OUTPUT POLARITY SELECT INPUT FOR SERIAL DATA

SAA6579T (RDS DEMODULATOR)

PIN No	PORT NAME	I/O	FUNCTION
1	QUAL	O	QUALITY INDICATION OUTPUT
2	RDDA	O	RDS DATA OUTPUT
3	VREF	—	REFERENCE VOLTAGE OUTPUT
4	MUX	I	MULTIPLEX SIGNAL INPUT
5	VDD	—	+5 V SUPPLY VOLTAGE FOR ANALOG PART
6	VSS	—	GND FOR ANALOG PART
7	CIN	I	SUBCARRIER INPUT TO COMPARATOR
8	SCOUT	O	SUBCARRIER OUTPUT OF RECONSTRUCTION FILTER
9	MODE	I	OSCILLATOR MODE / TEST CONTROL INPUT
10	TEST	I	TEST ENABLE INPUT
11	VSS	—	GND FOR DIGITAL PART
12	VDD	—	+5 V SUPPLY VOLTAGE FOR DIGITAL PART
13	OSC1	I	OSCILLATOR INPUT
14	OSC0	O	OSCILLATOR OUTPUT
15	T57	O	57 kHz CLOCK SIGNAL OUTPUT
16	RDCL	O	RDS CLOCK OUTPUT